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AEDC-TSR-91-P4

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CFD Wing/Pylon/Finned Store Mutual Interference Wind Tunnel Experiment

E. Rolland Heim
Calspan Corporation/AEDC Operations

February 1991

Final Report for Period September 10 - 17, 1990

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13. ABSTRACT (Maximum 200 words)

A wind tunel test was conducted to obtain pressure and flow visualization data from geometrically simple wing and store shapes under mutual interference conditions with the store both at its carriage position and selected points along a realistic store separation trajectory. The test was conducted at nominal Mach numbers of 0.95 and 1.2 at a nominal Reynolds number of 2.4 x 10^6/ft. Data were acquired for wing and store angles of attack of 0, 2, and 6 deg.

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CONTENTS

ILLUSTRATIONS

Figure

TABLES

NOMENCLATURE

ALPHA	Angle of attack of the wing model, deg
ALPHAS, ALPSRB	Angles of attack of the force and pressure models of the store, respectively, deg
ALPP	Missile (non-rolling body) axis angle of attack, deg
BETA	Wing model angle of sideslip, deg
BETAP	Missile (non-rolling body) axis angle of sideslip, deg
BETAS, BETSRB	Angles of sideslip of the force and pressure models of the store, respectively, deg
BL	Model Butt Line (spanwise location of an orifice row relative to the wing model centerline), in.
C	Local chord length, in.
CAT	Axial-force coefficient of the force model of the store, (axial force)/(Q)(S)
CBAR	Mean aerodynamic chord length, 8.5 in.
CLL	Rolling-moment coefficient of the force model of the store, (rolling moment)/(Q)(S)(d)
CLM	Pitching-moment coefficient of the force model of the store calculated about the store center of gravity located 2.79 in. aft of the store nose (pitching moment)/(Q)(S)(d)
CLMRB	Pitching-moment coefficient of the pressure model of the store calculated about a point 17.728 inches aft of the model nose
CLM1	Pitching-moment coefficient of the wing calculated about a point 7.382 in. aft of the leading edge of the wing centerline, (pitching moment)/(Q)(S1)(CBAR)
CLN	Yawing-moment coefficient of the force model of the store calculated about the store center of gravity located 2.79 in. aft of the model nose, (yawing moment)/(Q)(S)(d)
CLNRB	Yawing-moment coefficient of the pressure model of the store calculated about a point 18.59 in. aft of the model nose
CN	Normal-force coefficient of the force model of the store, (normal force)/(Q)(S)

CN1	Normal-force coefficient of the wing model, (normal force) /(Q)(S1)
CP	Pressure coefficient column heading on tabulated data
CPWXXX	Pressure coefficients (PWXXX - P)/Q
CY	Side-force coefficient of the force model of the store, (side force)/(Q)(S)
d	Diameter of the store centerbody, 1 in.
DPHI,DPSI,DTHA	Refer to Pylon Axis System definitions in Table 5
ID	Sequential indexing number for referencing data
L	Store model length, 5.941 in.
LP	Pylon model length, 4.5 in.
M	Free-stream Mach Number
P	Free-stream static pressure, psfa
PHI	Roll angle of the store relative to the non-rolling body axes, deg
PSI	Yaw angle of the store: Angle between the projection of the store longitudinal axis in the flight (stability) axis horizontal plane and the stability X axis
PHIF	Radial location of a row of fin pressures, positive clockwise looking upstream, deg
PHIP	Missile (non-rolling body) axis roll angle, deg
PHIR	Radial location of a row of (store) pressures, positive clockwise looking upstream, deg
PWXXX	Model (wall) pressure at orifice xxx, psfa
PT	Free-stream total pressure, psfa
Q	Free-stream dynamic pressure, psf
RE	Free-stream unit Reynolds Number, $(10)^{-6}$/ft
RUN	Sequential indexing number for referencing on-line data
S	Store model cross-sectional area, 0.0054542 ft^2
S1	Wing model planform area, 1.5347 ft^2

T	Free-stream static temperature, °R
THETA	Pitch angle of the store: Angle between the store longitudinal axis and its projection in the flight (stability) axis horizontal plane, deg
U( )	Uncertainty in the parenthetical parameter (+ /- implied)
XL	Model pressure orifice location measured from the store nose or the leading edge of the wing, pylon, or fin at the local chord, in.
XXX	Orifice Identification Number
X,Y,Z	Flight axis system X,Y, and Z-coordinates, ft full scale (Refer to Flight-Axis System definitions in Table 5)

1.0 INTRODUCTION

The work reported herein was conducted by the Arnold Engineering Development Center (AEDC), Air Force Systems Command (AFSC), under Program Element 62602F, Control Number 2567, at the request of AFATL/FXA, Eglin AFB, Florida. The AFATL/FXA project manager was Capt. William S. Jones. The results were obtained by Calspan Corporation, operating contractor for the Aerospace Flight Dynamics testing effort at the AEDC, AFSC, Arnold Air Force Base, TN. The test was conducted in the Aerodynamic Wind Tunnel (4T) of the Propulsion Wind Tunnel (PWT) complex during the period from September 10, 1990 through September 17, 1990 under AEDC Project Number CG64PB, PWT Test Number TC-912.

The test was conducted to support AFATL Computational Fluid Dynamics (CFD) project objectives. The test objectives were to obtain pressure and flow visualization data from geometrically simple wing and store shapes under mutual interference conditions with the store both at its carriage position and at selected points along a realistic store separation trajectory. Accomplishment of these objectives required use of the Captive Trajectory Support System and testing with both balance-mounted (metric) and pressure-instrumented stores.

Test article configurations consisted of a generic finned store shape and a clipped delta wing with a 45-deg leading edge sweep angle. Store pressure data were required at radial locations in 10-deg intervals completely around the store and at 8 spanwise locations from 10- to 80-percent span on both surfaces of each fin. Wing pressures were required from both upper and lower surface orifices at locations inboard, outboard, and in the plane of the pylon. These data requirements in combination with store size constraints required testing at locations on both the left and right sides of the wing model.

Pressure and flow visualization data were acquired for wing and store angles of attack of 0, 2, and 6 deg. Test conditions included Mach numbers of 0.95 and 1.2 at a nominal Reynolds number of 2.4×10^6/ft.

The scope of this report is limited to documentation of the test and presentation of the information required to use the data. The final data package has been transmitted to the AFATL/FXA, and a copy of the final data is on file at the AEDC. Requests for these data should be addressed to AFATL/FXA, Eglin AFB, FL 32542-5000.

2.0 APPARATUS

2.1 FACILITY DESCRIPTION

The AEDC Aerodynamic Wind Tunnel 4T is a closed-loop, continuous flow, variable-density tunnel in which the Mach number can be varied continuously from 0.1 to 1.05 and set at discrete Mach numbers in intervals of 0.1 from 1.1 to 2.0 using a flexible nozzle. At Mach numbers through Mach 1.1, the stagnation pressure can be varied from 300 to 3,400 psfa. At higher Mach numbers, testing can be conducted at stagnation pressures up to at least 1 atm; however, specific limits are a function of Mach number. The test section is 4-ft square and 12.5 ft long and enclosed by perforated variable porosity (0.5- to 10-percent open) walls. The primary model support system has a pitch angle capability of -8 to 27 deg with respect to the tunnel centerline and a roll capability of ± 180 deg about the roll axis of the pitch boom. A more complete description of the tunnel is contained in Ref 1.

2.2 TEST ARTICLES

The test articles included a clipped delta wing (NACA 64A010 airfoil section) with a detachable pylon and metric, pressure-instrumented, and dummy versions of a finned generic store. The store model shape was composed of a tangent-ogive forebody and afterbody, each 5/3 caliber, and a 10/3 - caliber cylindrical centerbody. The afterbody ogive was truncated as necessary on the metric and pressure-instrumented stores to accor. modate support by the Captive Trajectory Support (CTS' ystem.

The wing and pylon combination contained 146 pressure orifices for measuring pressure distributions at chordwise row locations near the store carriage position. The pressure model of the store included 228 pressure orifices arranged in 5 longitudinal rows on the body and 2 chordwise rows on each of the 4 fins. The fin design incorporated use of the NACA 0008 airfoil section and a 60-deg leading edge sweep angle.

Boundary-layer transition strips were not used on either the wing or store models. The test installation is shown in Fig. 1 and details and dimensions of the models are shown in Figs. 2 and 3. Orifice locations for the wing, store, and pylon models are presented in Table 1.

2.3 INSTRUMENTATION

Static pressures on the store and wing were measured with 15-psid Electrically Scanned Pressure (ESP) transducer modules. Five 48-port ESP modules were mounted on top of the CTS head and used to measure the store model pressures. Four other ESP modules mounted on the top of the roll boom near the downstream end were used to measure the wing and pylon pressures. Each port in each module had a silicon pressure transducer which was digitally addressed and calibrated online. The quality of the pressure data was monitored by continuously appiying a known pressure to 2 verification ports on each module.

To position the models as accurately as possible, the stings supporting the pressure-instrumented store and the wing model were equipped with strain gages in order to measure deflections caused by loads. The wing model sting was gaged to measure normal force and pitching moment, and the store sting was gaged to measure pitching and yawing moments only. A 6-component balance was used to measure loads on the metric store model.

Temperatures in the ESP modules were measured with iron-constantan thermocouples. These temperature measurements provided the feedback required to maintain the modules at an essentially constant temperature which reduced recalibration requirements.

Fluorescent oil was used to obtain the boundary-layer air-flow patterns over both the wing and stores. These data were recorded by still photographs from points located directly above and below the wing as well as from a side view.

3.0 TEST DESCRIPTION

3.1 TEST CONDITIONS AND PROCEDURES

Data were obtained at Mach numbers of 0.95 and 1.2 at a constant unit Reynolds number of 2.4 x 10^6 per ft. Test conditions were held constant while varying the store or the wing and store model attitudes. Data were obtained using the pitch-pause technique at wing and store angles of attack from -2 to 6 deg for the metric model and from 0 to 6 deg for the pressure-instrumented model of the store. Before the wing model was installed, a test phase, hereafter referred to as free-stream testing, was conducted to obtain longitudinal and lateral stability data using the metric store. These data were obtained at angles of attack from 0 to 20 deg. After the wing model was installed, a short trajectory phase was conducted to obtain separation data for a wing angle of attack of 0 deg only. Store physical properties and ejector force data for the separation trajectories are presented in Table 2. The store physical data were generated by considering the model to have been constructed on a 5-percent scale.

During the succeeding phases of the test, the store model was positioned at an essentially constant location relative to the wing/pylon at the beginning of each run. This position was directly "below" the pylon at a nominal separation distance of 0.070 in. with the nose of the store positioned nominally 5.6 in. behind a transverse plane normal to the wing chord line and passing through the midspan leading edge of the wing. This store position was maintained during runs in which the wing angle of attack was varied. To maintain a vertical plane of symmetry in the flow insofar as possible, a dummy store was attached to the pylon opposite the metric or pressure-instrumented store model, even during trajectory and simulated trajectory testing.

Simulated trajectory data in both pressure and flow visualization phases of testing were obtained at 4 points in the near flow field of the wing. Test conditions and store positions were selected from those at which the trajectory force data were acquired.

3.2 DATA ACQUISITION AND REDUCTION

All steady-state measurements were recorded by the facility online computer system and reduced to the final form. The data were then tabulated in the Tunnel 4T control room, recorded on magnetic tape, and transmitted to the AEDC central computer file. The data stored in the central computer file were generally available for plotting and analysis on the PWT Interactive Graphics System within 30 sec after data acquisition. The availability of the tabulated and graphical presentations of the data permitted continual online monitoring of the test results Typical plots generated on the PWT Interactive Graphics System are shown in Fig. 4.

The force and moment data were reduced to coefficient form using the reference areas and lengths given in the nomenclature. After the test, the store pressure-coefficient data were compiled in a more convenient form through organizing groups of 8 or line runs into single groups collated by roll attitude of the pressure orifice row, Mach number, and angle of attack. By so doing, a single set of data containing all the data for a given store attitude was created and referenced by a single (I D) number. A summary of these identification numbers is presented in Table 3.

Flow visualization, free-stream, and trajectory data were essentially final data as recorded online. Table 3 also contains run number summaries of these data. Samples of the final data tabulations are presented in Table 4. Tables 5 and 6 contain Nomenclatures for the freestream and trajectory online formatted data shown in Table 4. The data in Tables 4e and f are samples of the store pressure expanded data sets mentioned above.

3 3 CORRECTIONS

The wing angle of attack was corrected for sting angular deflection caused by aerodynamic loads. Store-model deflections, both translational and rotational, were also accounted for in the data reduction. Review of the pressure data indicates that pinching of 2 tubes occurred at certain roll angles of the store pressure model. These data were not corrected or removed because of the time-consuming nature of the task, because the pinching was intermittent, and because the erroneous data are easily identified.

Tunnel flow angularities were not determined since the CTS system and technique cannot currently account for them. Although the pitch-plane flow angle in Tunnel 4T for the past several years is well documented at less than 0.1 deg, the current flow angularity must presently be recognized as both larger and less uniform because of effects generated by the new flexible nozzle installation. In general, flow angles are still small, on the order of 0.1 deg; however, they are more significant at some points, most notably in or near the horizontal and vertical planes of symmetry of the tunnel at points away from the tunnel centerline. Information on the quality of the Tunnel 4T airflow subsequent to the flexible nozzle installation has not been published.

3.4 UNCERTAINTY OF MEASUREMENTS

Uncertainties (combinations of system and random errors) of the basic tunnel parameters, shown in Fig. 5, were estimated from repeat calibrations of the instrumentation and from repeatability and uniformity of the test section flow during tunnel calibration. Uncertainties in the instrumentation systems were estimated from repeat calibration of the systems against secondary standards whose uncertainties are traceable to Institute of Standards and Technology (formerly the National Bureau of Standards) calibration equipment. The tunnel parameter and instrument uncertainties for a 95-percent confidence level were combined using the Taylor series method of error propagation described (Ref. 2) to determine the various parameter uncertainties shown in Table 7.

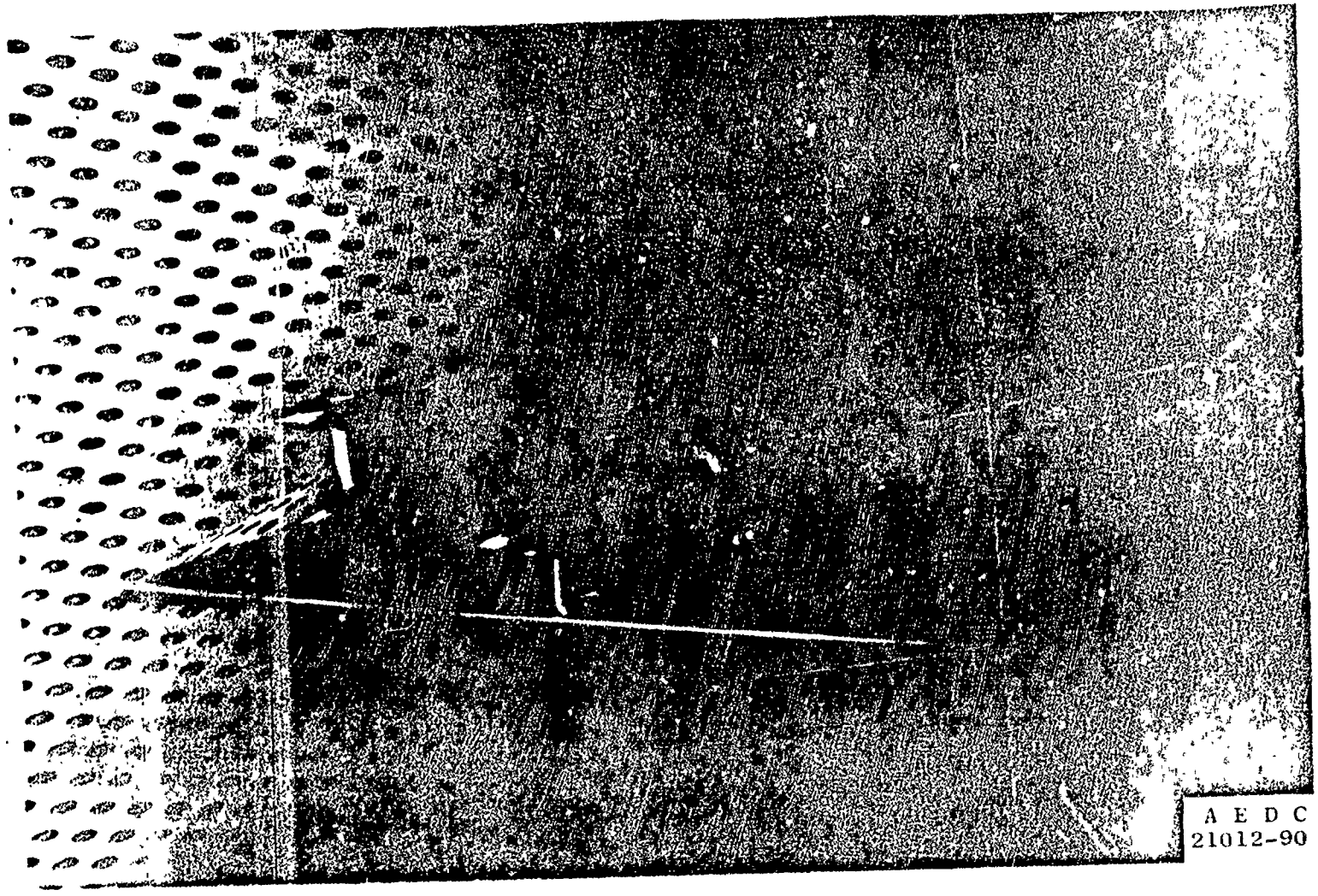
4.0 DATA PACKAGE PRESENTATION

The final data package contained (1) tabulated data summaries, (2) digitally coded magnetic computer tapes containing summary data, (3) magnetic tape information logs; (4) test article installat on photographs, (5) flow visualization photographs.

REFERENCES

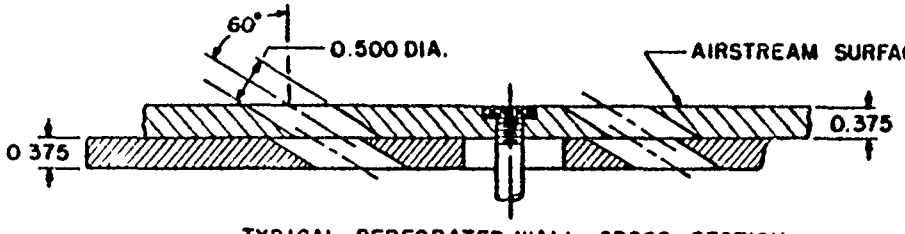
1. Test Facilities Handbook (Twelfth Edition). "Propulsion Wind Tunnel Facility, Vol. 4." Arnold Engineering Development Center, March 1984

2. Abernethy, R.B and Thompson, J.W , Jr. "Handbook - Uncertainty in Gas Turbine Measurements." AEDC-TR-73-5 (AD755356), February 1973.



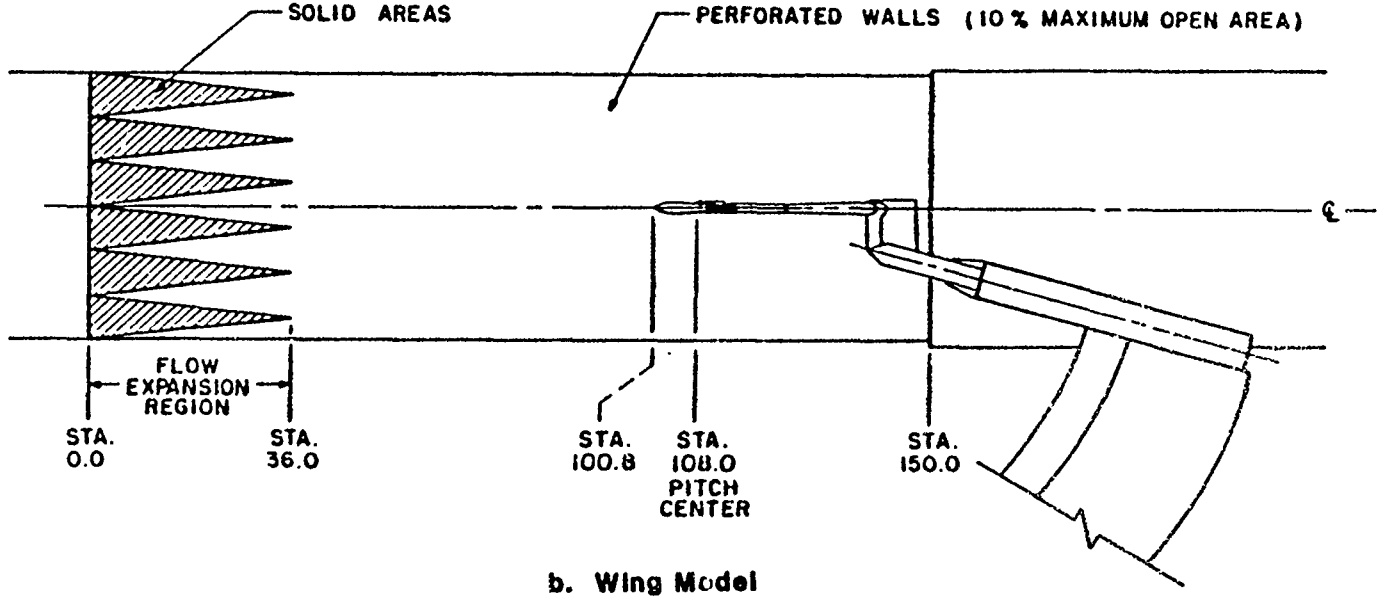
a. Overview

Figure 1. Model Installation



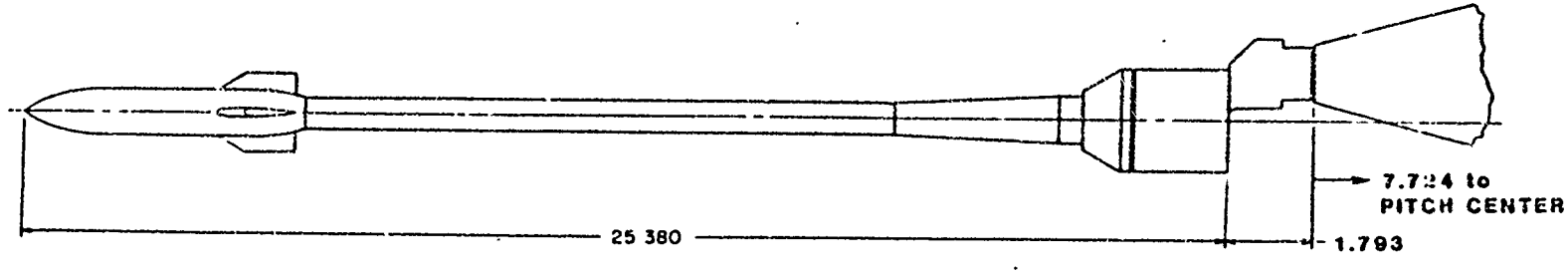
TYPICAL PERFORATED WALL CROSS SECTION

TUNNEL STATIONS AND DIMENSIONS ARE IN INCHES



b. Wing Model

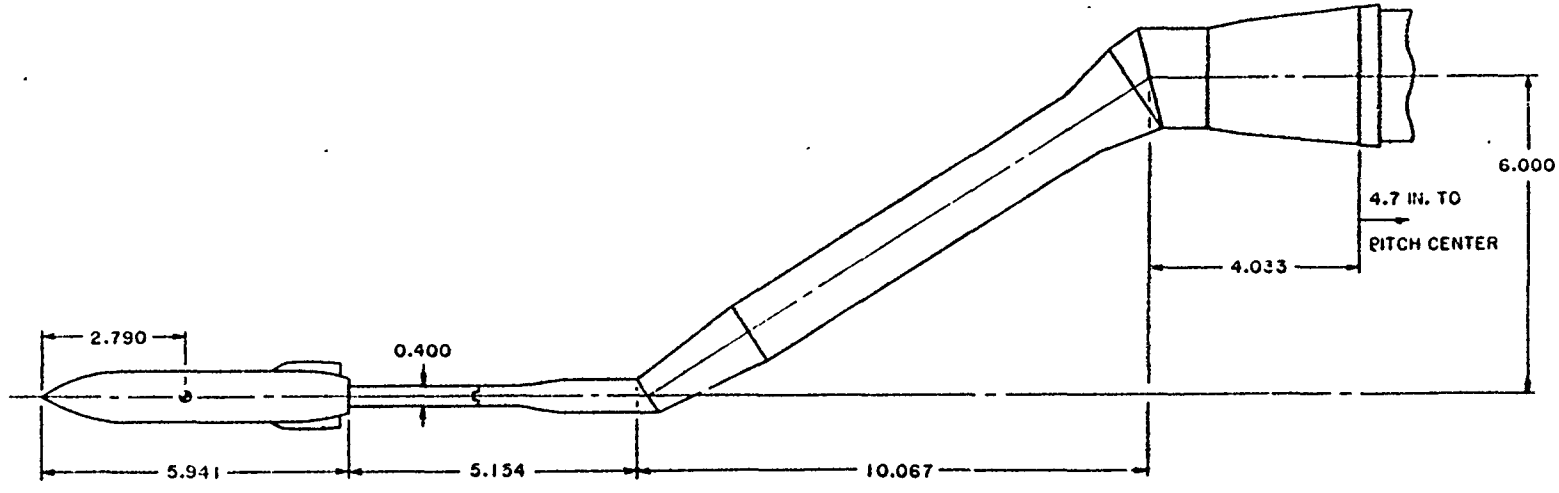
Figure 1. Continued



DIMENSIONS IN INCHES

c. Pressure-Instrumented Store

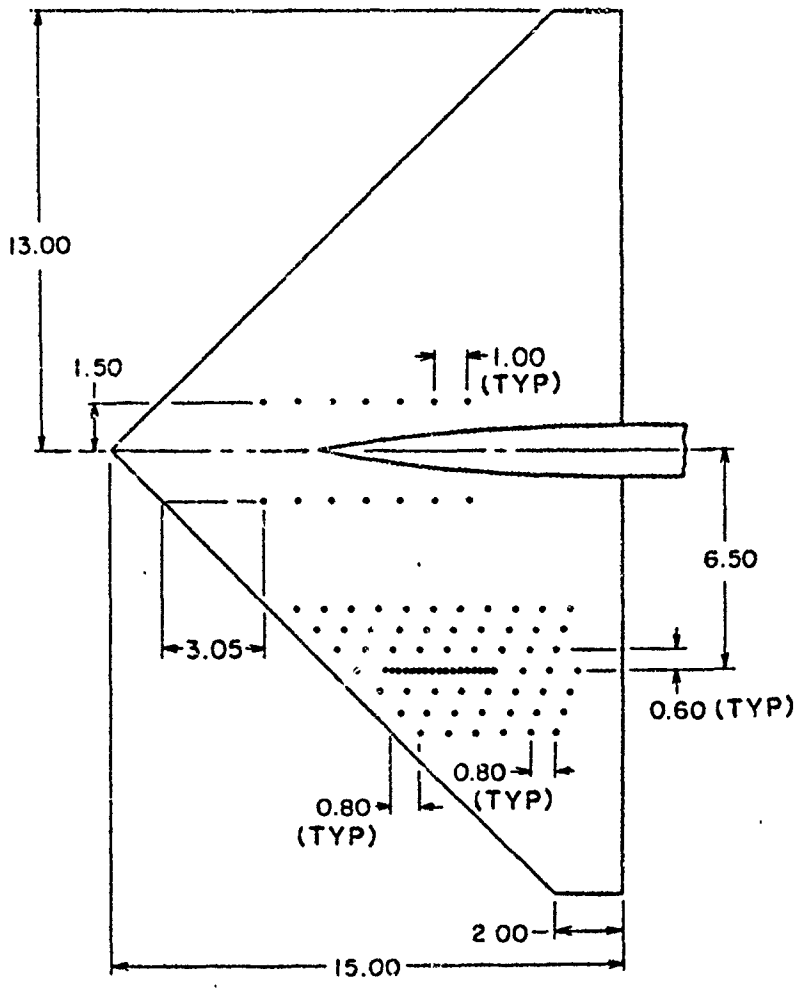
Figure 1. Continued



DIMENSIONS IN INCHES

d. Metric Store

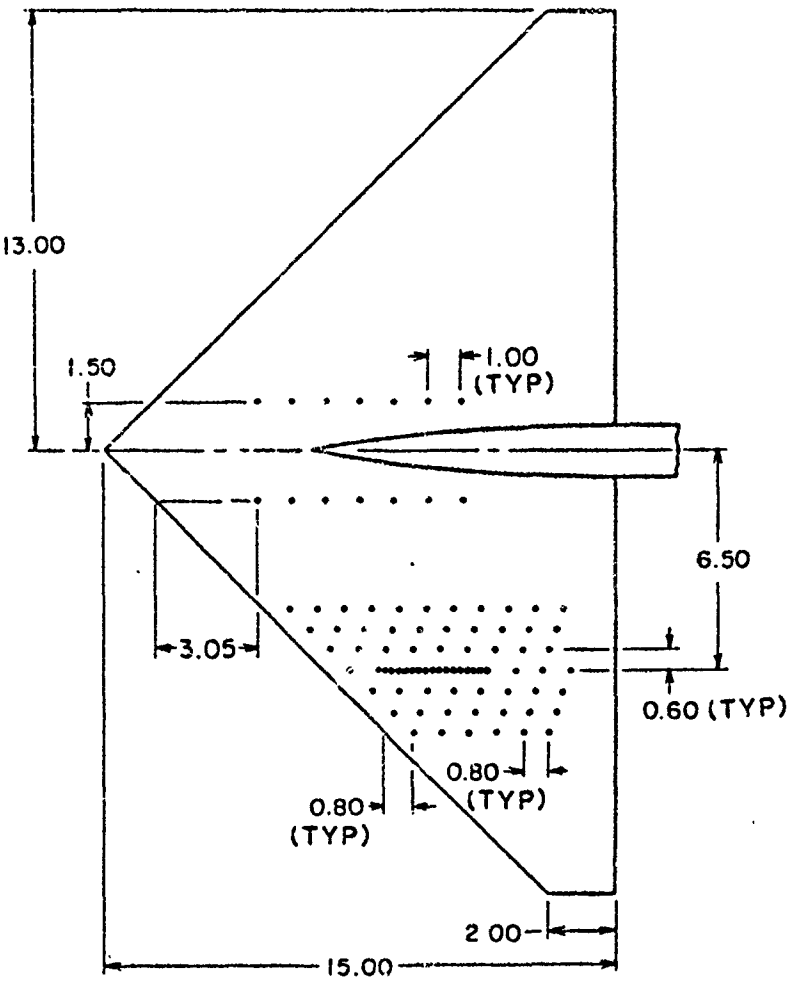
Figure 1. Continued



DIMENSIONS IN INCHES

a. Wing Lower Surface Dimensional Data

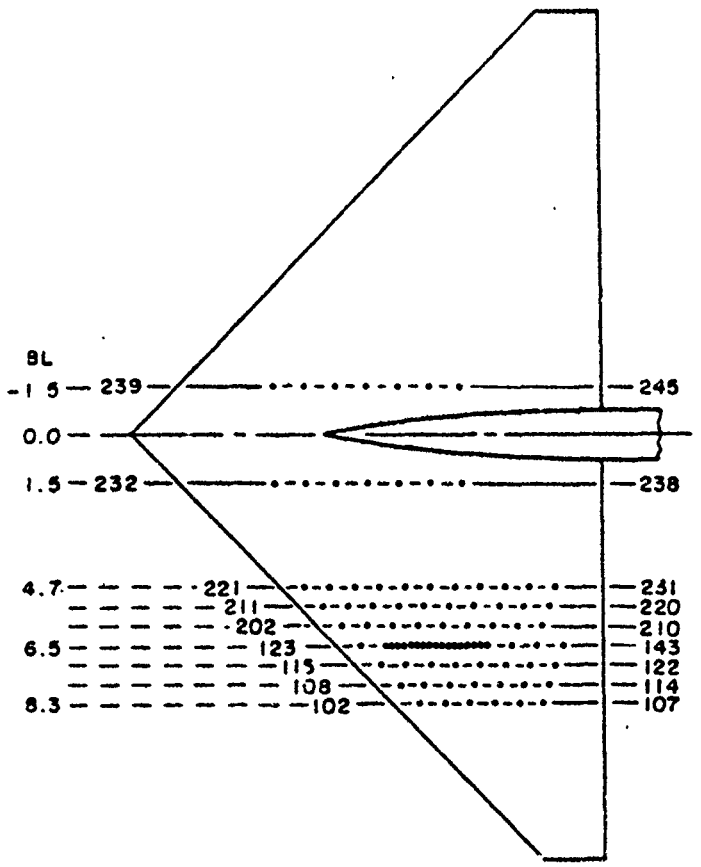
2. Test Article Details



DIMENSIONS IN INCHES

a. Wing Lower Surface Dimensional Data

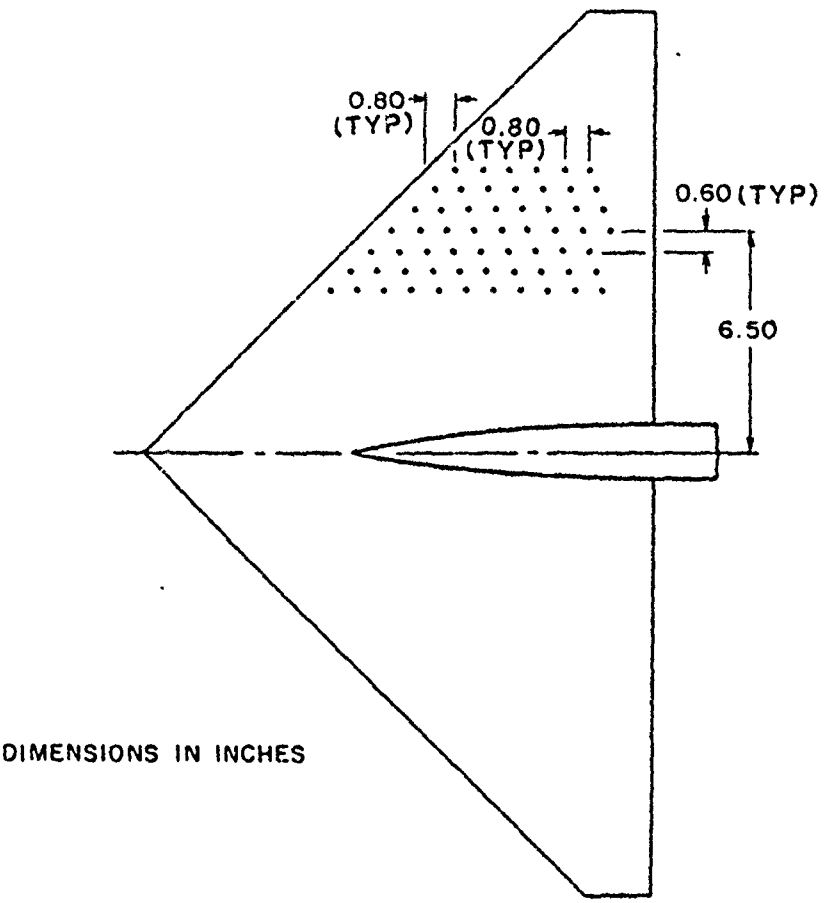
2. Test Article Details



NOTE: XXX = ORIFICE IDENTIFICATION NUMBER

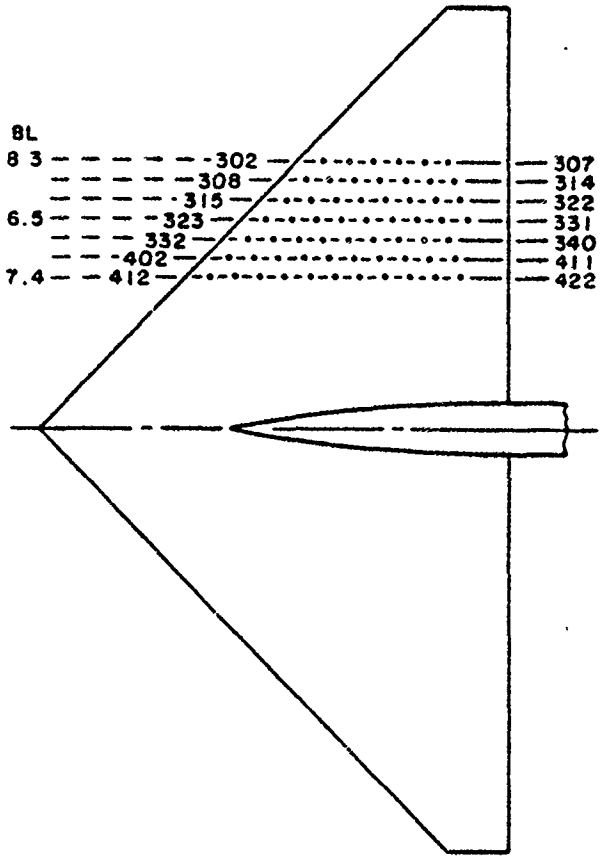
b. Wing Lower Surface Orifice Identification

Figure 2. Continued



c. Wing Upper Surface Dimensional Data

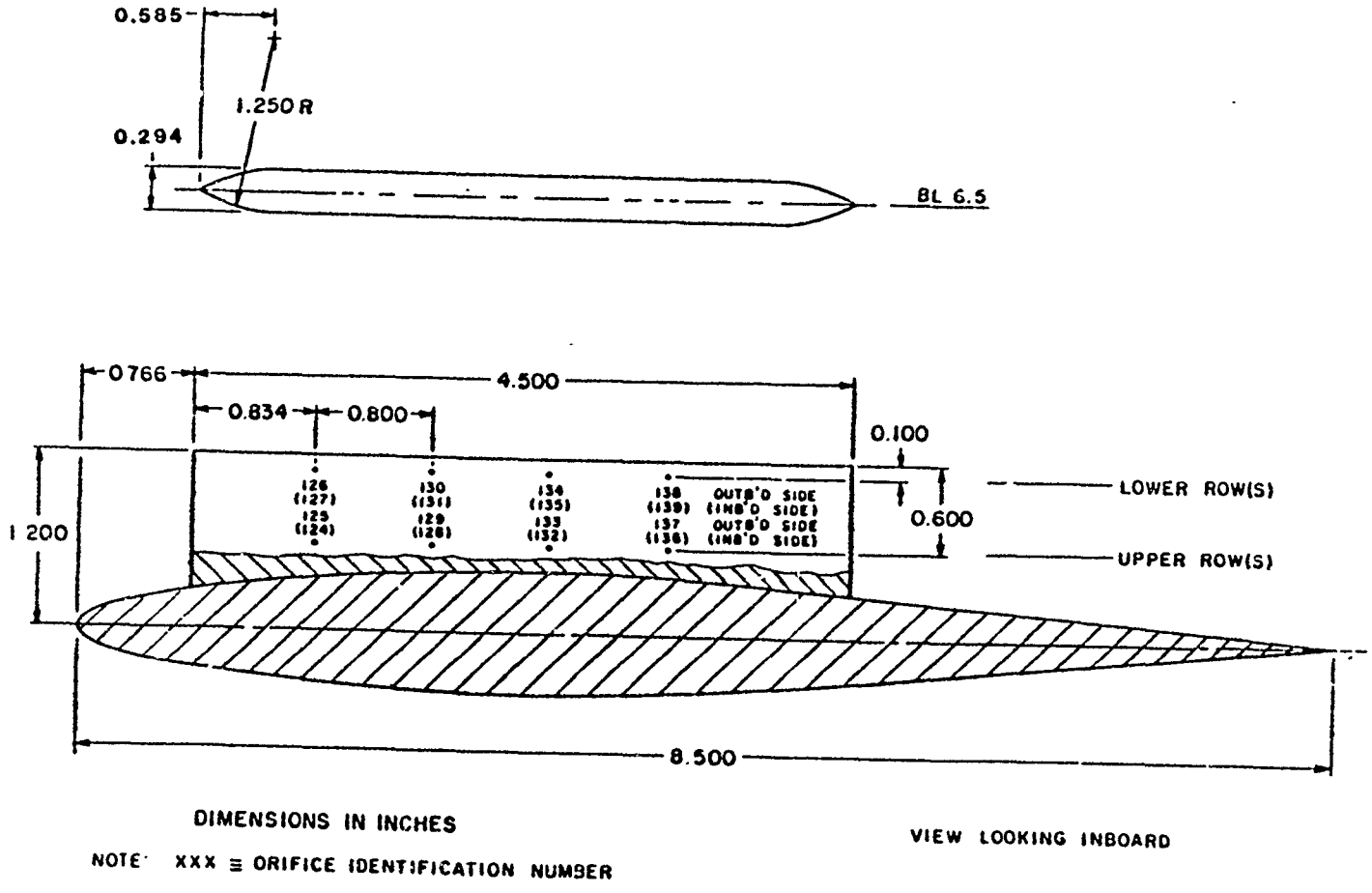
Figure 2. Continued



NOTE: XXX = ORIFICE IDENTIFICATION NUMBER

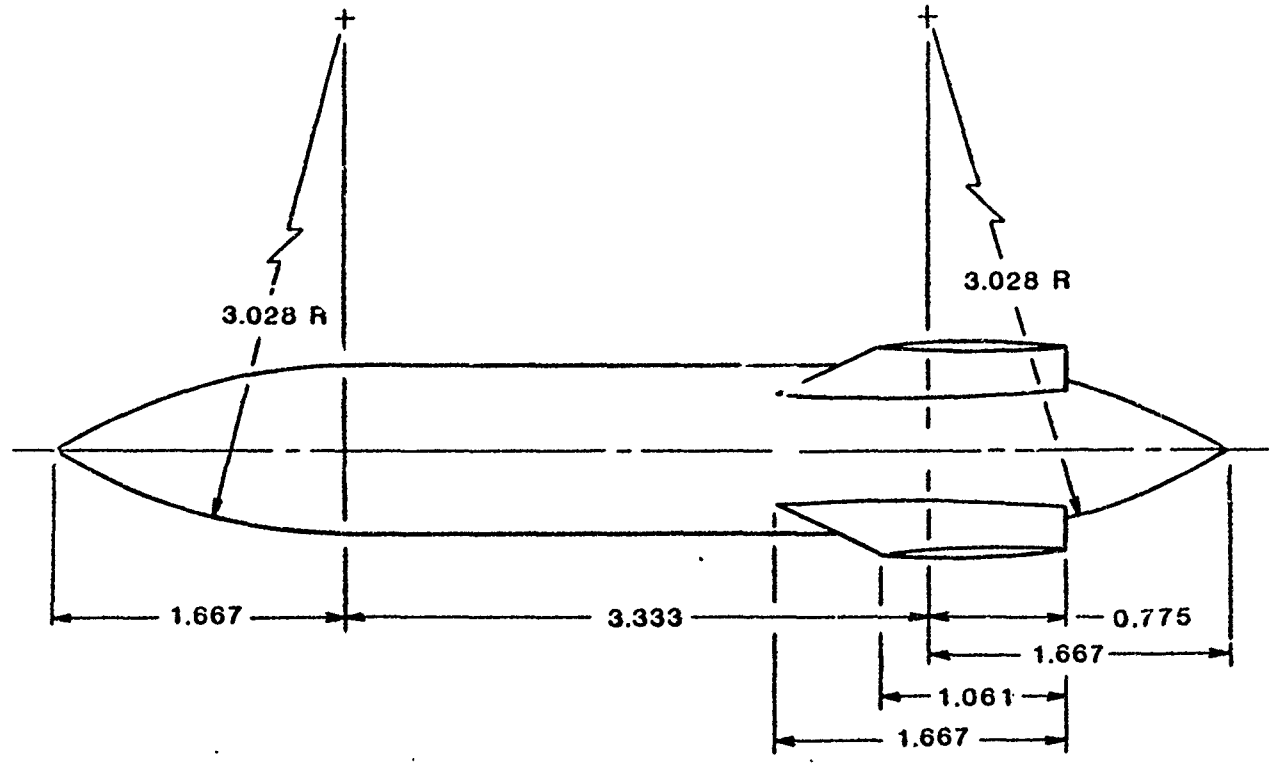
d. Wing Upper Surface Orifice Identification

Figure 2. Continued



e. Pylon Dimensions and Orifice Identification

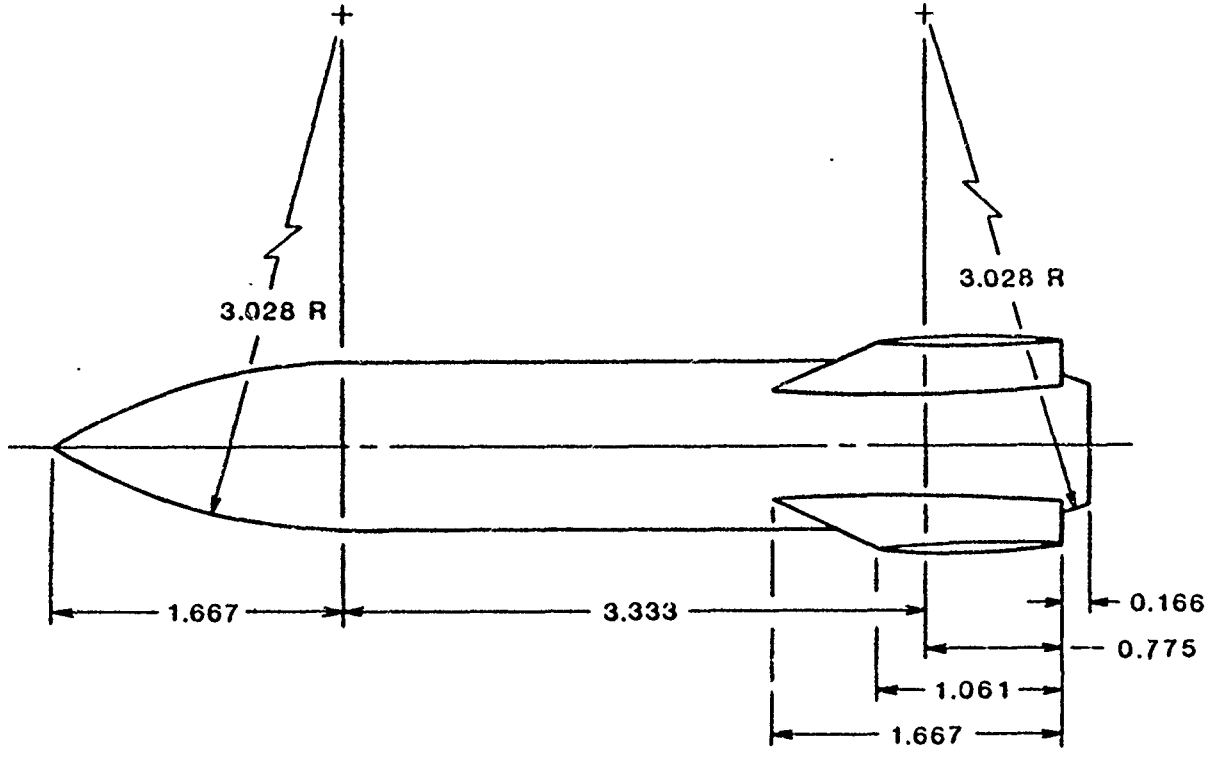
Figure 2. Continued



DINENSIONS IN INCHES

f. Dummy Store Model

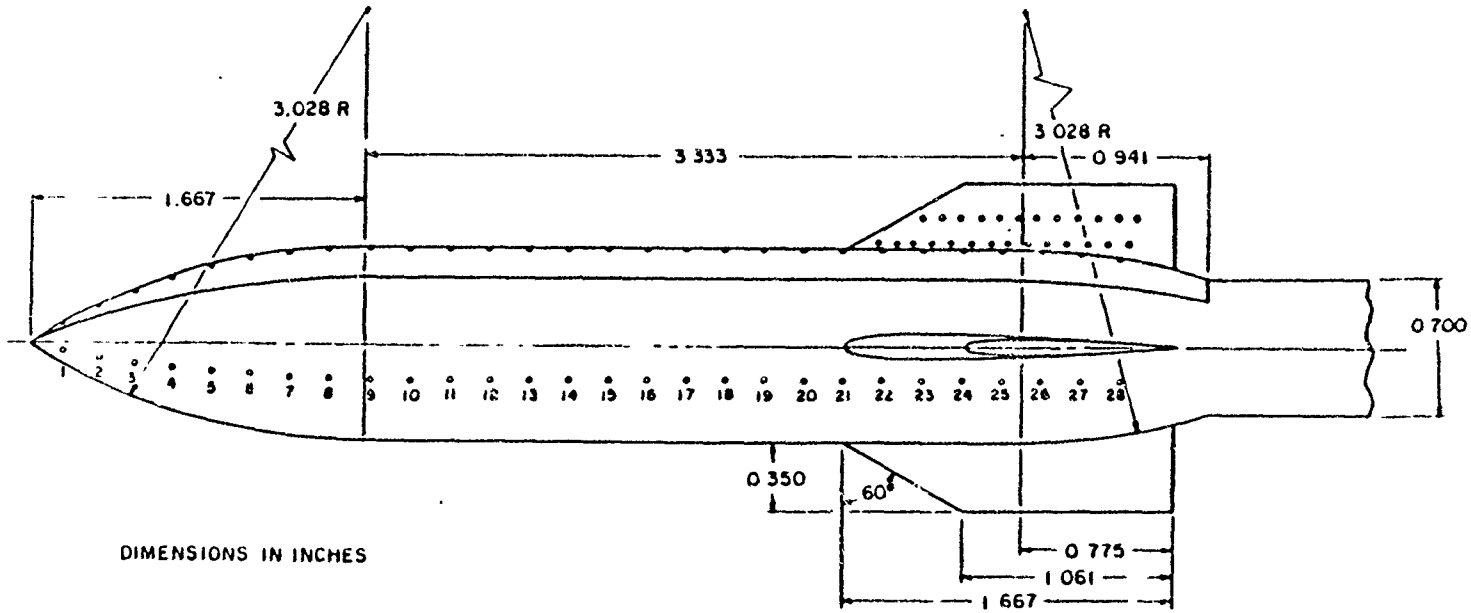
Figure 2. Continued



DIMENSIONS IN INCHES

g. Metric Store Model

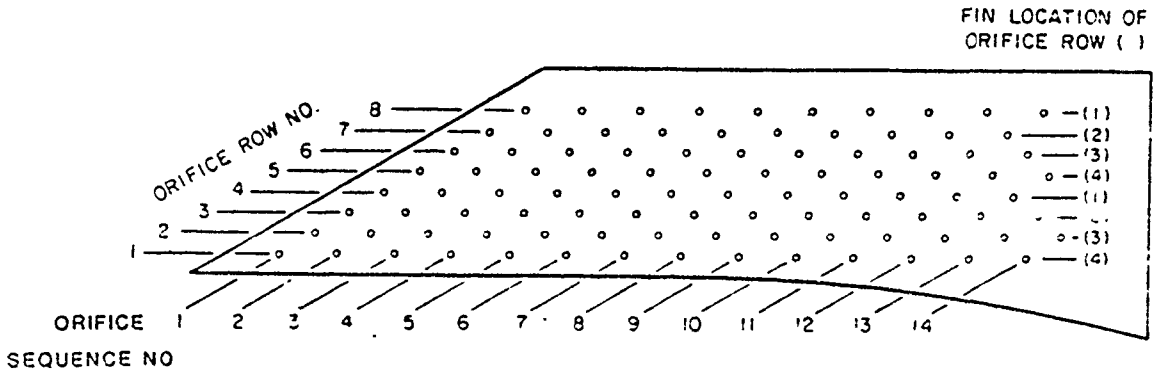
Figure 2. Concluded



a. Model Contour Dimensional Data

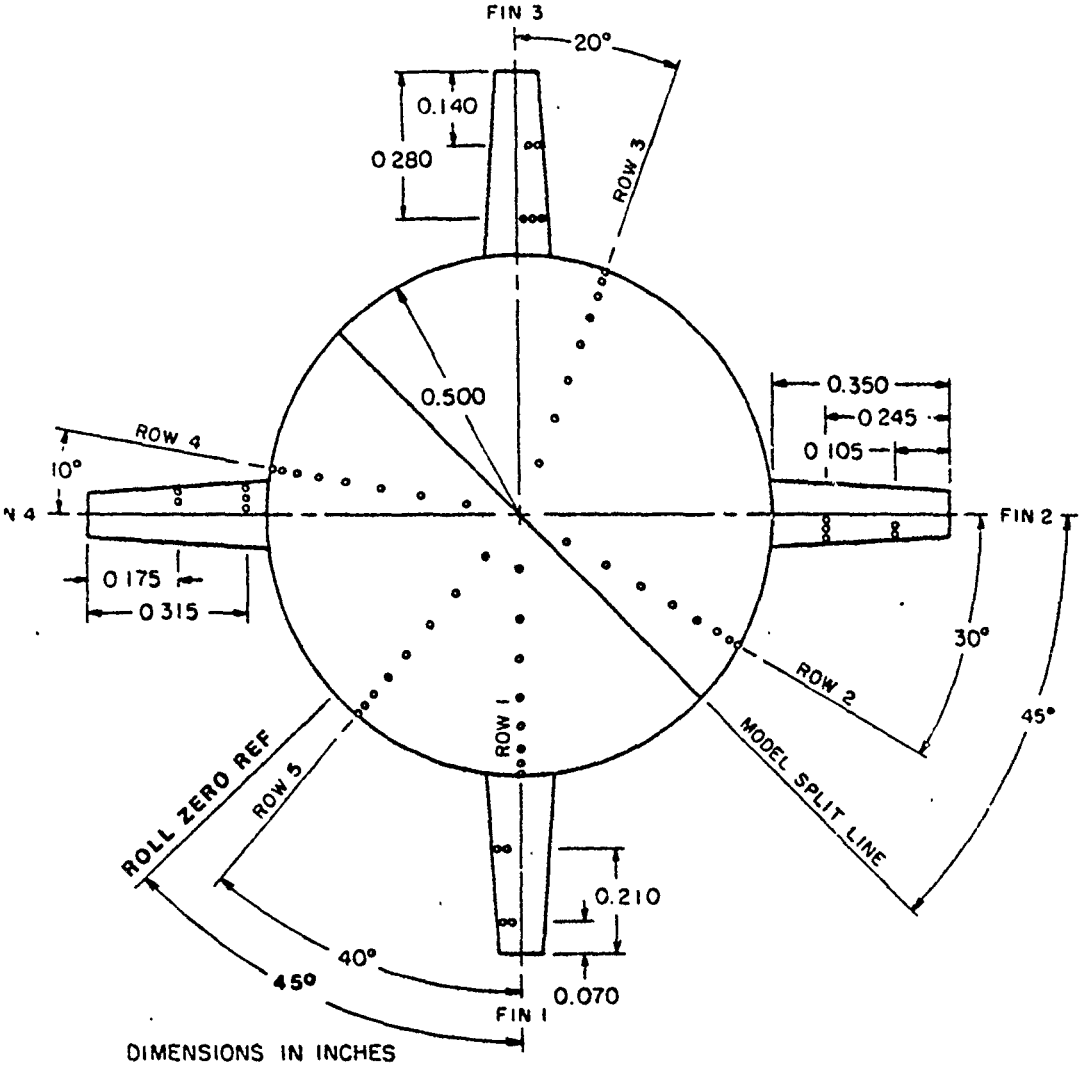
Figure 3. Pressure-Instrumented Store Details

SEQ NO.	BODY ORIFICE ROWS					FIN ORIFICE ROWS							
	1	2	3	4	5	1	2	3	4	5	6	7	8
	ORIFICE IDENTIFICATION NUMBER												
1	502	522	604	632	714	932	906	828	806	920	841	818	742
2	503	523	605	633	715	933	907	829	807	921	842	819	743
3	504	524	606	634	716	934	908	830	808	922	843	820	744
4	505	525	607	635	717	935	909	831	809	923	844	821	745
5	506	526	608	636	718	936	910	832	810	924	845	822	746
6	507	527	609	637	719	937	911	833	811	925	846	823	747
7	508	528	610	638	720	938	912	834	812	926	847	824	801
8	509	529	611	639	721	939	913	835	813	927	902	825	803
9	510	530	612	640	722	940	914	836	814	928	903	826	804
10	511	531	613	641	723	941	915	837	815	929	904	827	805
11	512	532	614	642	724	942	916	838	816	930	905		
12	513	533	615	643	725	943	917	389	817	931			
13	514	534	616	644	726	944	918	840					
14	515	535	617	645	727	945	919						
15	516	536	618	646	728								
16	517	537	619	647	729								
17	518	538	620	702	730								
18	519	539	621	703	731								
19	520	540	622	704	732								
20	521	541	623	705	733								
21	---	542	624	706	734								
22	---	543	625	707	735								
23	---	544	626	708	736								
24	---	545	627	709	737								
25	---	546	628	710	738								
26	---	547	629	711	739								
27	---	602	630	712	740								
28	---	603	631	713	741								



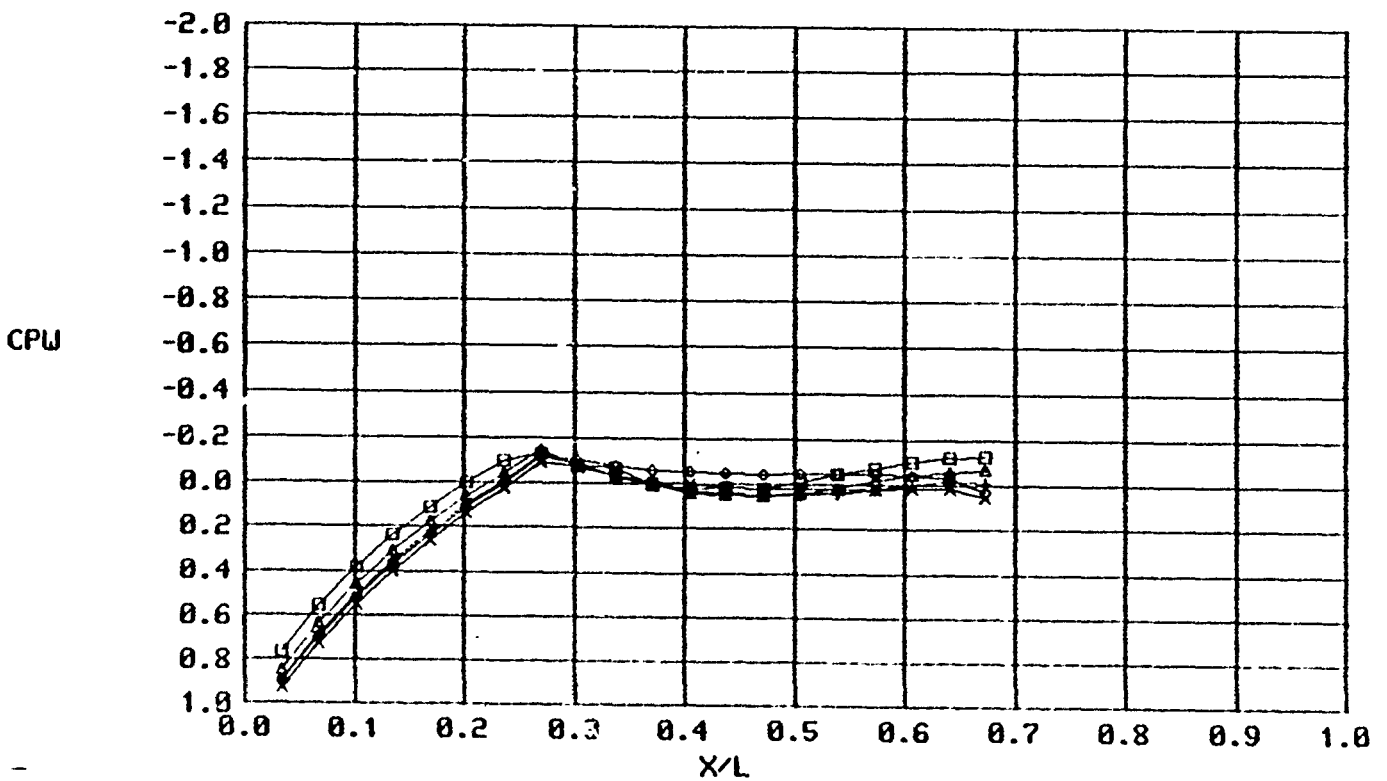
c. Individual Orifice Identification

Figure 3. Concluded



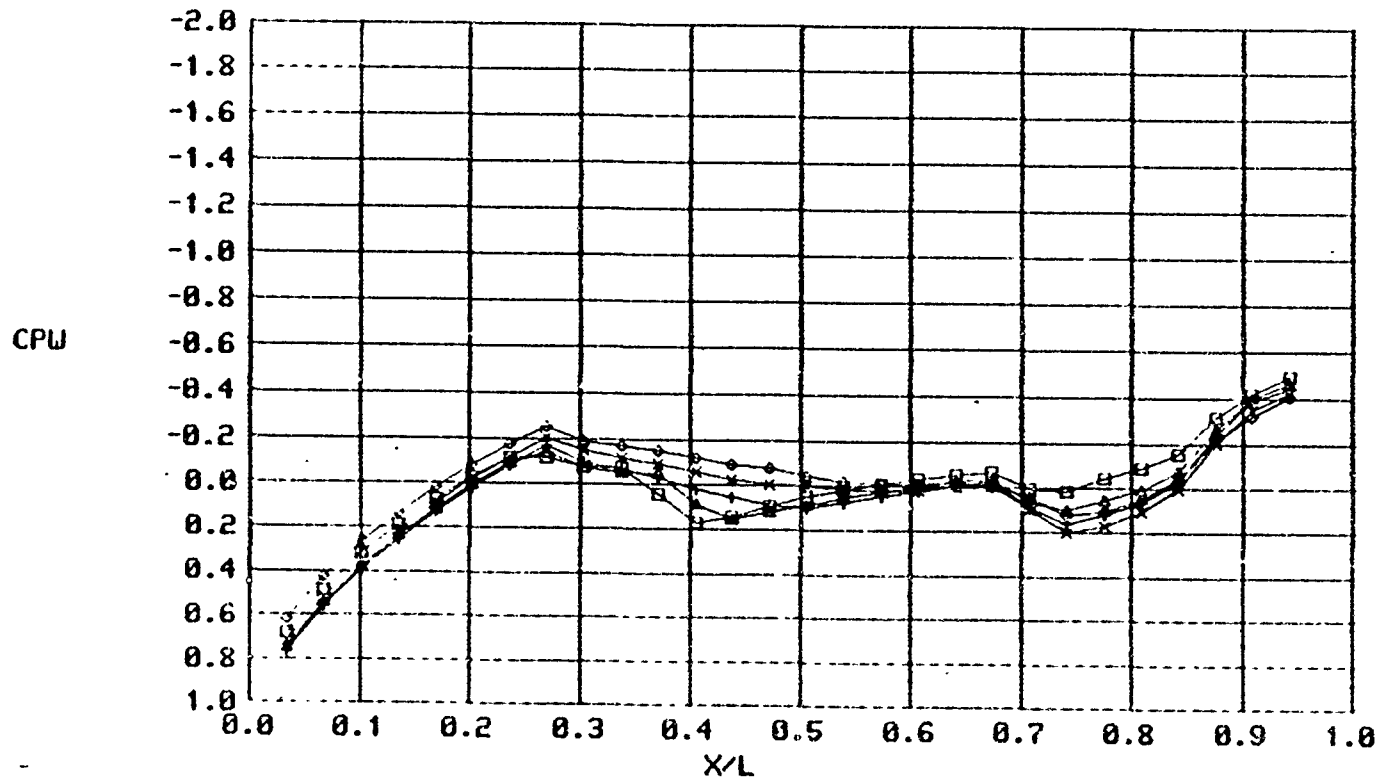
b. Orifice Row Location

Figure 3. Continued



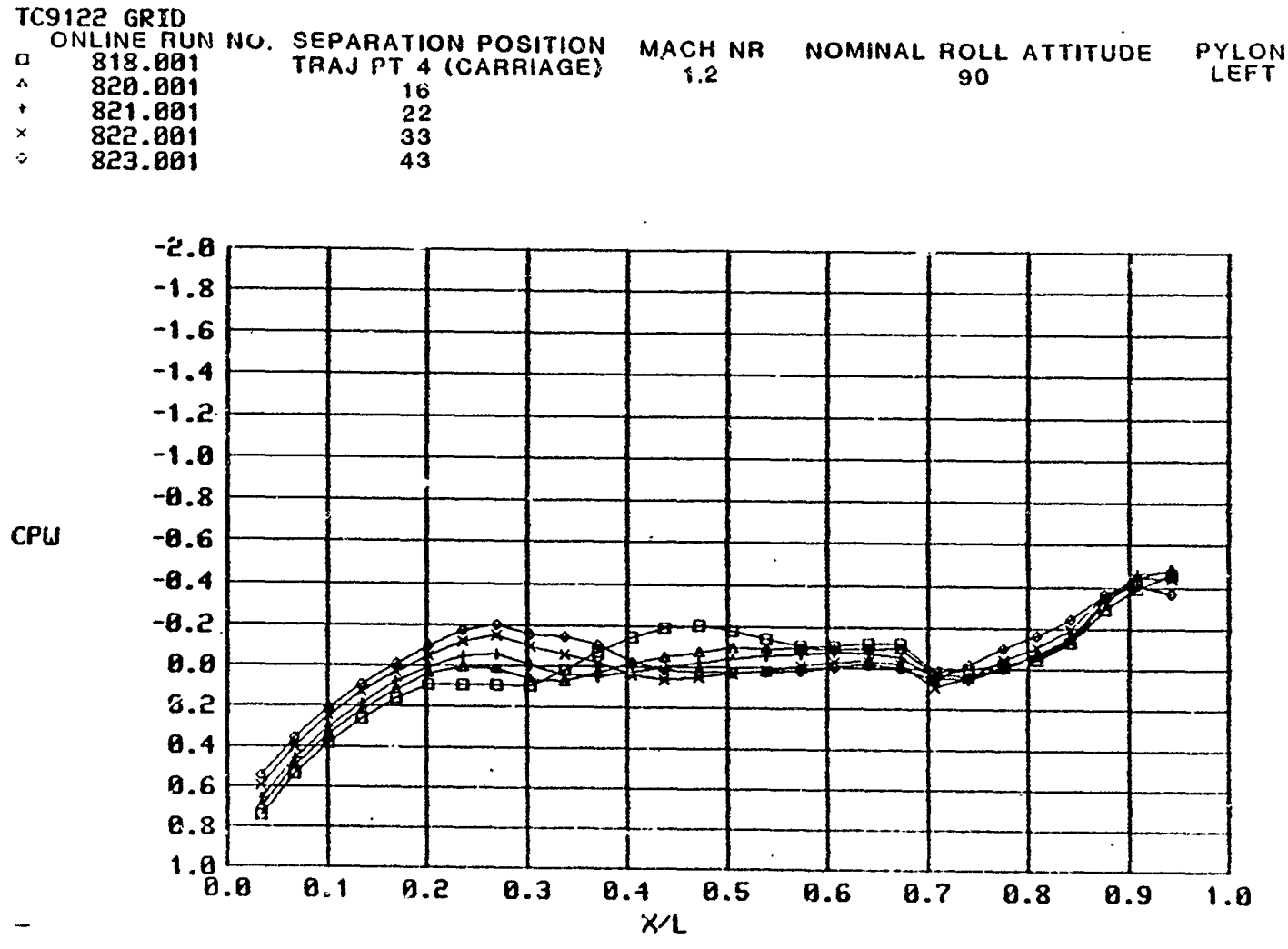
a. Store Body Row 1

Figure 4. Typical Pressure Plots



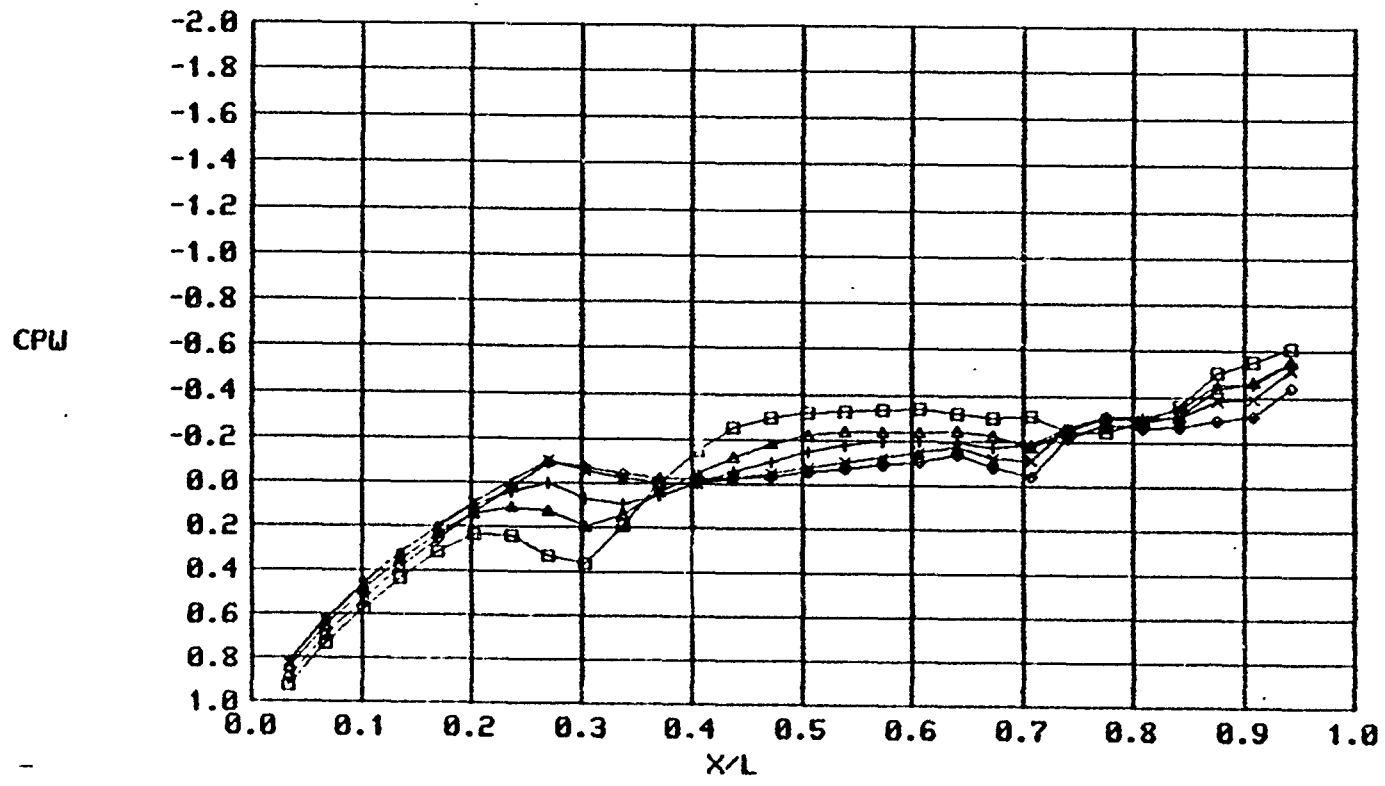
b. Store Body Row 2

Figure 4. Continued



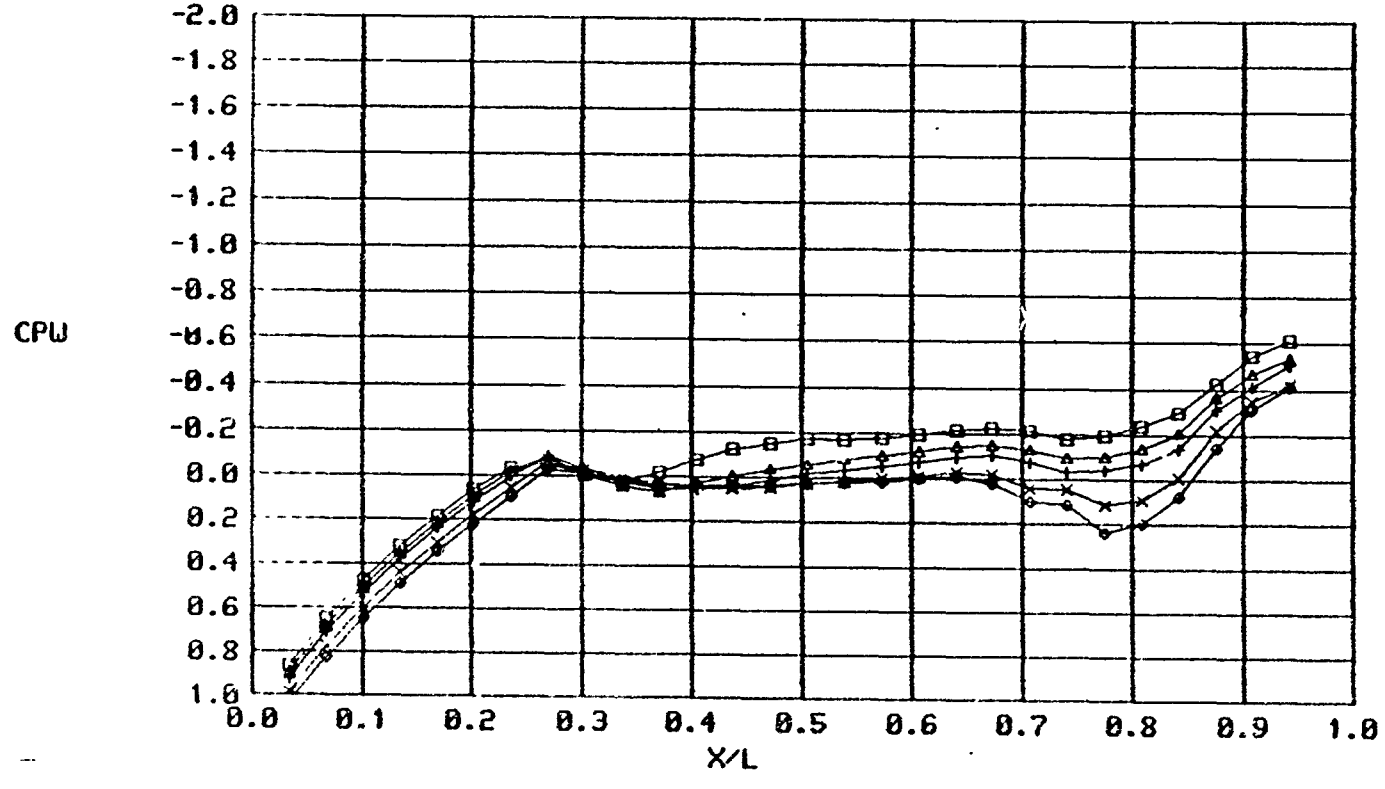
c. Store Body Row 3

Figure 4. Continued



d. Store Body Row 4

Figure 4. Continued



e. Store Body Row 5

Figure 4. Concluded

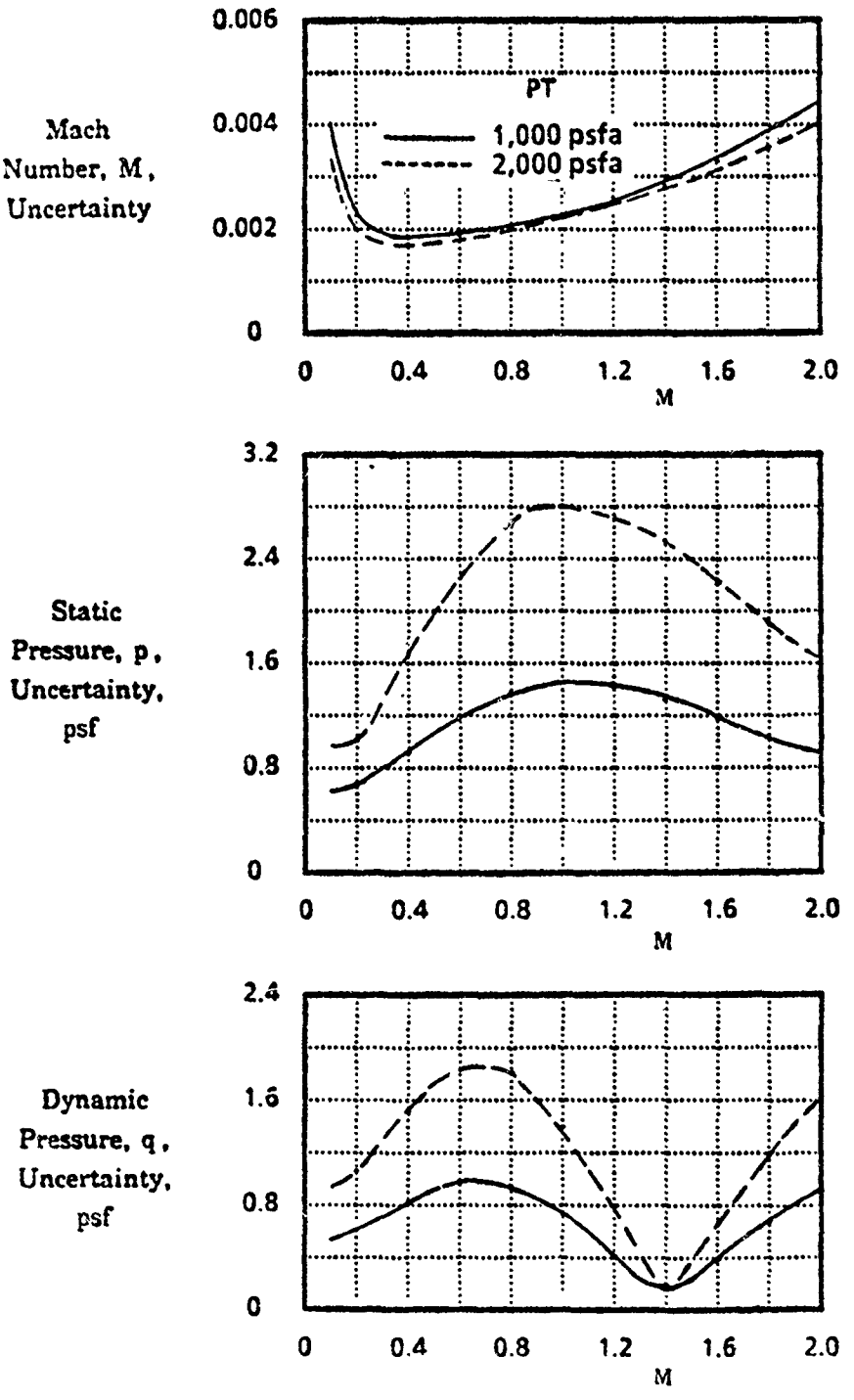


Figure 5. Estimated Uncertainties in Test Condition Data

Table 1. Pressure Orifice Locations
a. Store Model

ORF SEQ NO.	BODY ROWS 1	BODY ROWS 2 - 5	FIN ROWS 1	FIN ROWS 2	FIN ROWS 3	FIN ROWS 4	FIN ROWS 5	FIN ROWS 6	FIN ROWS 7	FIN ROWS 8
	XL/L		XL/C							
1	0.0337	0.0337	0.0623	0.0647	0.0673	0.0702	0.0733	0.0767	0.0805	0.0846
2	0.0673	0.0673	0.1245	0.1294	0.1347	0.1404	0.1466	0.1535	0.1610	0.1692
3	0.1010	0.1010	0.1868	0.1942	0.2020	0.2107	0.2199	0.2302	0.2415	0.2538
4	0.1347	0.1347	0.2491	0.2589	0.2694	0.2809	0.2933	0.3070	0.3221	0.3384
5	0.1683	0.1683	0.3113	0.3236	0.3367	0.3511	0.3666	0.3837	0.4026	0.4230
6	0.2020	0.2020	0.3736	0.3883	0.4040	0.4213	0.4399	0.4605	0.4831	0.5076
7	0.2357	0.2357	0.4359	0.4531	0.4714	0.4916	0.5132	0.5372	0.5636	0.5922
8	0.2693	0.2693	0.4981	0.5178	0.5387	0.5618	0.5865	0.6140	0.6441	0.6768
9	0.3030	0.3030	0.5604	0.5825	0.6061	0.6320	0.6598	0.6907	0.7246	0.7614
10	0.3366	0.3366	0.6227	0.6472	0.6734	0.7022	0.7331	0.7675	0.8052	0.8460
11	0.3703	0.3703	0.6849	0.7120	0.7407	0.7725	0.8065	0.8442		
12	0.4040	0.4040	0.7472	0.7767	0.8081	0.8427	0.8798			
13	0.4376	0.4376	0.8095	0.8414	0.8754					
14	0.4713	0.4713	0.8717	0.9061						
15	0.5050	0.5050								
16	0.5386	0.5386					C			
17	0.5723	0.5723	1.606	1.546	1.485	1.424	1.364	1.303	1.242	1.181
18	0.6060	0.6060								
19	0.6396	0.6396								
20	0.6733	0.6733								
21	-----	0.7070								
22	-----	0.7406								
23	-----	0.7743								
24	-----	0.8079								
25	-----	0.8416								
26	-----	0.8753								
27	-----	0.9089								
28	-----	0.9426								

L = 5.941

Table 1. Continued

b. Wing Model

ROW	1	2	3	4	5	6	7	8	9
BL	8.3	7.7	7.1	6.5	5.9	5.3	4.7	1.5	-1.5
C	6.7	7.3	7.9	8.5	9.1	9.7	10.3	13.5	13.5
ORIFICE				X/C					
1	0.1194	0.1096	0.1013	*0.0941	0.0879	0.0825	0.0777	(.2259)	(.2259)
2	0.2388	0.2192	0.2025	[0.1882]	0.1758	0.1650	0.1553	(.3000)	(.3000)
3	0.3582	0.3288	0.3038	[0.2824]	0.2637	0.2474	0.2330	(.3741)	(.3741)
4	0.4776	0.4384	0.4051	[0.3765]	0.3517	0.3299	0.3107	(.4482)	(.4482)
5	0.5970	0.5480	0.5063	[0.4706]	0.4396	0.4124	0.3884	(.5222)	(.5222)
6	0.7164	0.6575	0.6076	.5647	0.5275	0.4949	0.4660	(.5963)	(.5963)
7		0.7671	0.7089	0.6588	0.6154	0.5773	0.5437	(.6704)	(.6704)
8			0.8101	0.7529	0.7033	0.6598	0.6214		
9				0.8471	0.7912	0.7423	0.6990		
10						0.8247	0.7767		
11							0.8544		

() Indicate orifices which have no counterpart orifice on the upper (non-pylon) surface of the wing.
[] Indicate orifices which are not available on the lower (pylon) surface of the wing because of the pylon pressure measurements.
* Indicates lower surface orifices covered by the pylon.

Table 1. Concluded

c. Pylon Model

ORIFICE	1	2	3	4
ROW		XL/LP		
LOWER	0.1853	0.3631	0.5409	0.7187
UPPER	0.1853	0.3631	0.5409	0.7187

LP = 4.5

Orifice locations apply to both inboard and outboard sides of the pylon.

Table 2. Full-Scale Store and Ejector Characteristics

Weight: 2,000 lb
Center of Gravity: XCG = 4.65 ft aft of the store nose
Roll Inertia: IXX = 20 slug-ft^2
Pitch Inertia: IYY = 360 slug-ft^2
Yaw Inertia: IZZ = 360 slug-ft^2
Roll Damping Coefficient: CLP = -4/rad
Pitch Damping Coefficient: CMQ = -40/rad
Yaw Damping Coefficient: CNR = -40/rad
Forward Ejector Location: 4.06 ft aft of store nose
Forward Ejector Force: 2,400 lb, constant
Aft Ejector Location: 5.73 ft aft of store nose
Aft Ejector Force: 9,600 lb, constant
Ejector Stroke Length: 0.33 ft

Table 3. I D and Run Numcer Summaries
a. Pressure, Flow Visualization, and Captive Loads Data

MACH	ALPHA	STORE LOCATION COORDINATES			STORE ATTITUDE			ID	FLOW VIS RUN	CAPTIVE LOADS RUN
		X	Y	Z	PSI	THETA	PHI			
0.95	-2	0	0	0	0	0	0	---	---	232
	0	0	0	0	0	0	0	1	926	236
	2	0	0	0	0	0	0	2	963	241
	6	0	0	0	0	0	0	3	967	245
	0	-0.07	-0.07	0.87	1.97	3.54	1.4	7	928	---
	0	-0.21	-0.17	1.78	4.95	5.20	2.8	8	932	---
	0	-0.46	-0.28	2.91	8.92	4.75	4.7	9	940	---
	0	-0.78	-0.31	3.98	12.01	2.27	6.3	10	959	---
1.20	-2	0	0	0	0	0	0	---	---	261
	0	0	0	0	0	0	0	4	97[illegible]	257
	2	0	0	0	0	0	0	5	NONE	281
	6	0	0	0	0	0	0	6	998	269
	0	-0.07	-0.04	0.88	1.37	3.62	0.8	11	973	---
	0	-0.19	-0.08	1.68	3.10	5.18	1.7	12	984	---
	0	-0.53	-0.13	3.33	6.74	4.69	4.0	13	985	---
	0	-1.00	-0.09	5.05	9.41	1.09	6.5	14	990	---

Table 3. (Concluded)
b. Free-stream and Trajectory Data

DATA	MACH	ALTITUDE	RE	ALPHA	ALPP (DTHA)	BETAP (-DPSI)	PHIP (DPHI)	RUN NO.
F.S	0.95	-----	2.4	-----	VAR	0	0	58
						-10	0	59
						0	-45	60
						-10	-45	61
	1.20					0	0	62
						-10	0	63
						0	-45	64
						-10	-45	65
TRAJ	0.95	26000		0	-----	-----	-----	283
	1.20	38000		0	-----	-----	-----	287

Figure 4. Sample Final Data

a. Metric Store in the Free-stream

00012967

RUN	SURVEY	M	PT	TT	Q	P	T	V	RE	TDP	SN	SCALE	DATE	TIME	CON SET	ZERO SET	TRANSONIC 4T
58	41	0 950	1205 8	91 0	426.3	674 3	466 4	1006.1	2 5	37 2	0 0027	9 050	9/11/91	20 54 21	58/01	55/01	TEST TC-912

A/C F/S	ALPHA	BETA	IP	IY	IR	CONFIG	WING	STORE	A	L1	L2	L3	XCG	YCG	ZCG	PHIS	PHIRD	DELAY
	0 00	0 00	0 00	0 00	0 0	0	FUSC	SNGL FORCE	2 182	1 667	1 667	1 667	4 65	0 00	0 00	45 0	0	0

	REFERENCE AXIS									BODY AXIS COEFFICIENTS								SUMMARY 1		
PN	XREF	YREF	ZREF	DPSI	DTHA	DPHI	ALPHAS	BETAS	CN	CLM	CY	CLN	CLL	CAT	Q	NDX	RUN	PHIREF
5	0 0	0 03	0 01	0 01	-2 00	0 00	-2 00	-0.01	-0 163	0 052	-0 026	-0 019	0 007	0.271	426 3	1	58	0
6	0 0	0 02	-0 02	0 01	0 06	0 07	0 06	-0 01	0 052	-0 072	-0 012	-0 044	0 005	0 268	426 2	2	58	0
7	0 0	0 02	-0 01	0 01	2 06	0 05	2 06	0.00	0 222	-0 094	0 009	-0 090	0 007	0 264	425 8	3	58	0
8	0 0	0 02	0 00	0 01	6 03	0 03	6 03	-0.01	0.585	-0 179	-0 008	-0 025	0 004	0 271	426 1	4	58	0
9	0 0	0 03	0 00	0 01	10 03	0.03	10.03	0.00	1 017	-0 379	-0 004	-0 037	0 008	0 257	426 5	5	58	0
10	0 0	0 02	-0 02	-0 01	15 07	-0 01	15 07	0 01	1.671	-0 685	-0 061	0 000	0 026	0 194	427 0	6.	58	0
11	0 0	0 02	-0 02	0 02	20 09	0 06	20 09	0 00	2 516	-0 996	-0 018	-0 948	0 016	0 160	427 3	7	58	0

Table 4. Continued

b. Pressure-Instrumented Store at the Carriage Position

RUN	SURVEY	M	PT	TT	Q	P	T	V	RE	TDP	SH	SCALE	DATE	TIME	CON SET	ZERO SET	TRANSONIC 41
630		189 0	949	1199 0	93 0	423 5	671 3	468 3	1007 0	2 4	5 5 0	0021	0 050	9/18/91	23 56 32	630/01	649/01	TEST TC-912

A/C W/P	ALPHA	BETA	IP	IY	IR	CONFIG	WING	STORE		A	L1	L2	L3	XCG	YCG	ZCG	PHIS	PHIRB
	1 89	0 00	-0 12	0 03	0 0	1	RGHT	SNGL	PRESS 2	182	1 667	1 667	1 667	4 65	0 00	0 00	45 0	0

ROLLED BODY AXIS COEFFICIENTS SUMMARY 2

PSI	THA	PHI	ALFSRB	BETSRB	CNRB	CLMRB	CYRB	CLNRB	CLL	CAT
0 006	1 914	0 0	1 91	0 00	0 000	5 482	0 000	-8 921	0 000	0 000.

Table 4. Continued

c. Trajectory Data

00013010

RUN	TRAJ	M	PT	TT	Q	P	T	RE	TOP	SN	SCALE	H	DT	DATE	TIME	CON SET	ZEROSET	TRANSONIC 41
283	48	0 949	1283	92 0	424 9	674 0	467 5	2 5	15 7	8 0026	8 050	26 0	0 0025	9/15/91	16 17 31	283/01	281/01	TEST IC-912

STORE	WT	A	L1	L2	L3	XCG	DXMCG	DXMCG	YCG	ZCG	IXX	IXY	IXZ	IYY	IYZ	IZZ	CLP	CMQ	CNR
SNGL FORCE	2000	2 182	1 667	1 667	1 667	4 65	0 00	0 00	0 00	0 00	20 0	0 0	0 0	360 0	0 0	360 0	4 0	40 0	40 0

A/C W/P	ALPHA	BETA	NZ	DIVE	BANK	IP	IY	IR	CONFIG	WING	MOIN	NROLL	AUTO	POST	COEF	THRUST	EJECT	XFE	DXAE	OMGM	ZE1	ZE2
	0 00	0 00	1 0	0 0	0 0	0 00	0 00	0 0		1 RGHT	0	0	0	0	0	0	2	4 06	1 67	0 0	0 33	0 33

FLIGHT AXIS POSITIONS AND ORIENTATIONS — BODY AXIS FORCE AND MOMENT COEFFICIENTS — SUMMARY 1

PN	T	X	Z	PSI	THA	PHI	ALPHAS	BETAS	CN	CLM	CY	CLN	CLL	LAT	QA	FE1	FE2
4 0 003	0 00	0 00	0 00	0 00	0 00	0 0	0 00	0 00	0 644	-1 430	-0 954	1 520	0 100	0 901	475 5	2400	9600
6 0 016	0 00	0 00	0 01	0 02	0 05	0 0	0 18	-0 03	0 675	-1 472	-0 955	1 522	0 106	0 903	475 4	2400	9600
8 0 020	0 00	0 00	0 04	0 08	0 20	0 1	0 46	-0 10	0 713	-1 512	-0 933	1 532	0 093	0 931	475 2	2400	9600
9 0 030	-0 01	-0 01	0 10	0 19	0 45	0 2	0 84	-0 21	0 690	-1 456	-0 893	1 471	0 044	0 934	475 1	2400	9600
10 0 040	-0 01	-0 01	0 17	0 34	0 80	0 3	1 32	-0 37	0 709	-1 344	-0 829	1 410	0 026	0 932	475 0	2400	9600
11 0 050	-0 02	-0 02	0 27	0 52	1 26	0 5	1 90	-0 55	0 737	-1 324	-0 777	1 380	0 015	0 931	474 9	2400	9600
12 0 060	-0 03	-0 03	0 38	0 75	1 78	0 7	2 49	-0 77	0 777	-1 308	-0 707	1 293	0 005	0 910	474 8	0	0
13 0 070	-0 04	-0 04	0 50	1 01	2 28	0 8	3 00	-1 03	0 813	-1 273	-0 610	1 150	0 003	0 878	474 6	0	0
14 0 080	0 05	-0 05	0 62	1 30	2 73	1 0	3 48	-1 31	0 850	-1 271	-0 511	1 016	0 003	0 866	474 5	0	0
15 0 090	-0 06	-0 06	0 74	1 62	3 16	1 2	3 92	-1 61	0 885	-1 280	-0 423	0 907	0 004	0 854	474 3	0	0
16 0 100	-0 07	-0 07	0 87	1 97	3 54	1 4	4 33	-1 94	0 930	-1 300	-0 363	0 860	0 004	0 852	474 2	0	0
17 0 110	-0 09	-0 09	0 99	2 34	3 89	1 6	4 71	-2 29	0 966	-1 297	-0 299	0 800	0 003	0 834	474 0	0	0
18 0 120	-0 10	-0 10	1 12	2 73	4 20	1 8	5 05	-2 66	1 003	-1 318	-0 236	0 758	0 003	0 837	473 9	0	0
19 0 130	-0 12	-0 12	1 25	3 14	4 48	2 0	5 36	-3 04	1 028	-1 313	-0 165	0 712	0 002	0 834	473 7	0	0
20 0 140	-0 14	-0 13	1 38	3 57	4 71	2 2	5 63	-3 45	1 052	-1 312	-0 106	0 694	0 001	0 848	473 6	0	0
21 0 150	-0 16	-0 14	1 51	4 02	4 91	2 4	5 87	-3 86	1 093	-1 353	-0 024	0 617	0 003	0 858	473 5	0	0
22 0 160	-0 18	-0 16	1 64	4 48	5 07	2 6	6 08	-4 30	1 126	-1 398	0 062	0 528	0 006	0 667	473 3	0	0
23 0 170	-0 21	-0 17	1 78	4 95	5 20	2 8	6 25	-4 74	1 147	-1 408	0 146	0 444	0 007	0 872	473 1	0	0
24 0 180	-0 24	-0 19	1 91	5 44	5 28	3 0	6 39	-5 20	1 156	-1 405	0 223	0 355	0 008	0 866	473 0	0	0
25 0 190	-0 26	-0 20	2 05	5 94	5 32	3 3	6 49	-5 66	1 168	-1 411	0 323	0 266	0 009	0 863	472 8	0	0
26 0 200	-0 29	-0 22	2 19	6 43	5 33	3 5	6 56	-6 13	1 178	-1 416	0 411	0 181	0 009	0 859	472 7	0	0
27 0 210	-0 32	-0 23	2 33	6 94	5 29	3 7	6 59	-6 60	1 181	-1 417	0 498	0 095	0 010	0 854	472 5	0	0
28 0 220	-0 36	-0 24	2 48	7 44	5 22	4 0	6 58	-7 07	1 189	-1 436	0 589	0 006	0 010	0 851	472 3	0	0
29 0 230	-0 39	-0 26	2 62	7 94	5 10	4 2	6 55	-7 55	1 203	-1 488	0 659	-0 057	0 007	0 854	472 2	0	0
30 0 240	-0 43	-0 27	2 77	8 43	4 95	4 4	6 47	-8 02	1 208	-1 523	0 738	-0 128	0 004	0 850	472 0	0	0
31 0 250	-0 46	-0 28	2 91	8 92	4 75	4 7	6 36	-8 48	1 195	-1 523	0 809	-0 180	0 003	0 848	471 8	0	0
32 0 260	-0 50	-0 29	3 06	9 40	4 52	4 9	6 21	-8 95	1 179	-1 515	0 874	-0 223	0 002	0 848	471 6	0	0
33 0 270	-0 54	-0 29	3 21	9 87	4 24	5 2	6 03	-9 40	1 147	-1 479	0 937	-0 283	0 002	0 842	471 5	0	0
34 0 280	-0 59	-0 30	3 36	10 32	3 92	5 4	5 81	-9 85	1 123	-1 460	0 988	-0 307	0 001	0 836	471 3	0	0
35 0 290	-0 63	-0 30	3 51	10 77	3 56	5 6	5 55	-10 29	1 078	-1 434	1 042	-0 334	0 000	0 828	471 1	0	0
36 0 300	-0 68	-0 31	3 67	11 19	3 17	5 9	5 25	-10 73	1 060	-1 422	1 102	-0 360	0 000	0 835	471 0	0	0
37 0 310	-0 73	-0 31	3 83	11 61	2 74	6 1	4 92	-11 15	1 013	-1 383	1 153	-0 375	-0 002	0 836	470 8	0	0
38 0 320	-0 78	-0 31	3 98	12 01	2 27	6 3	4 56	-11 57	0 955	-1 312	1 201	-0 385	-0 005	0 831	470 6	0	0
39 0 330	-0 83	-0 31	4 14	12 39	1 77	6 5	4 16	-11 98	0 889	-1 243	1 250	-0 394	-0 007	0 821	470 4	0	0

Table 4. Continued

c. Concluded

00011011

RUN	TRAJ	M	PS	TT	Q	P	T	RE 1DP	SN	SCALE	H	DI	DATE	TIME	CON SET	ZEROSET	TRANSONIC 41
283	48	0 949	1203 3	92 0	424 9	674 0	467 5	2 5 15 7	0	0026 0 050	26 0K	0 0025	9/15/91	16 17 31	283/01	281/01	TEST TC-912

STORE	WT	A	L1	L2	L3	XCG	DXMCG	DXNCG	YCG	ZCG	IXX	IXY	IXZ	IYY	IYZ	IZZ	CLP	CMQ	CNR
SNGL FORCE	2000	2 182	1 667	1 667	1 667	4 65	0 00	0 00	0	0 00	20 0	0 0	0 0	360 0	0 0	360 0	-4 0	-40 0	-40 0

A/C W/P	ALPHA	BETA	NZ	DIVE	BANK	IP	IY	IR	CONFIG	WING	MOIN	NROLL	AUTO	POST	COEF	THRUST	EJECT	XFE	DXAE	OMGM	ZE1	ZE2
	0 00	0 00	1 0	0 0	0 0	0 00	0 00	8 0	1	RGHT	0	0	0	0	0	0	2	4 06	1 67	0 0	0 33	0 33

FULL SCALE VELOCITIES AND ACCELERATIONS — SUMMARY 2

PN	T	VX	VY	VZ	UR	U	V	W	P	Q	R	UDOT	VDOT	WDOT	PDOT	QDOT	RDOT
4	0 000	961 3	0 0	0 0	961 3	0 0	0 0	0 0	0 00	0 00	0 00	-15 0	-15 9	214 5	8 6	17 7	7 3
6	0 010	961 1	-0 5	3 0	961 1	-0 2	-0 2	2 1	0 08	0 18	0 07	-15 5	-15 7	213 9	9 1	17 5	7 3
8	0 020	960 9	-1 7	7 7	961 0	-0 3	-0 5	4 3	0 17	0 35	0 15	-17 2	-14 7	213 3	5 4	17 3	7 3
9	0 030	960 7	-3 6	14 0	960 8	-0 5	-0 5	6 4	0 22	0 52	0 22	-19 3	-13 3	213 6	3 7	17 6	6 9
10	0 040	960 5	-6 1	22 1	960 7	-0 7	-0 6	8 5	0 25	0 70	0 29	-22 1	-11 3	213 1	2 2	18 1	6 5
11	0 050	960 1	-9 3	31 8	960 6	-0 9	-0 7	10 7	0 27	0 88	0 35	-25 9	-9 4	212 3	1 2	18 2	6 3
12	0 060	959 5	-13 0	41 7	960 5	-1 2	-0 8	11 7	0 29	0 90	0 41	-27 0	-7 6	18 3	0 3	-6 3	5 9
13	0 070	958 9	-17 2	50 3	960 3	-1.5	-0 9	11 9	0 29	0 84	0 47	-26 3	-5 6	17 6	0 1	-6 1	5 2
14	0 080	958 2	-21 9	58 3	960 2	-1 7	-0 9	12 0	0 29	0 78	0 52	-25 8	-3 6	16 9	0 1	-6 1	4 6
15	0 090	957 4	-27 0	65 7	960 1	-2 0	-0 9	12 2	0 29	0 72	0 57	-25 3	-1 7	16 2	0 2	-6 1	4 1
16	0 100	956 6	-32 5	72 5	959 9	-2 2	-0 9	12 4	0 29	0 66	0 61	-24 9	-0 3	15 4	0 3	-6 2	3 8
17	0 110	955 8	-38 4	78 8	959 8	-2 5	-0 9	12 5	0 30	0 59	0 65	-24 1	1 2	14 8	0 2	-6 1	3 6
18	0 120	954 9	-44 5	84 4	959 6	-2 7	-0 9	12 7	0 30	0 53	0 68	-23 7	2 7	14 2	0 1	-6 2	3 4
19	0 130	953 9	-50 9	89 5	959 5	-3 0	-0 9	12 8	0 30	0 47	0 72	-23 1	4 3	13 8	0 1	-6 2	3 2
20	0 140	953.0	-57 7	94 0	959 3	-3 2	-0 9	13 0	0 30	0 41	0 75	-22.7	5 7	13 5	0 0	-6 1	3 1
21	0 150	952 0	-64 6	97 9	959 2	-3 4	-0 8	13 1	0 30	0 35	0 78	-22 2	7 5	12 9	0 1	-6 3	2 7
22	0 160	950 9	-71 9	101 3	959 0	-3 6	-0.7	13 2	0 30	0 29	0 80	-21 6	9 4	12 5	0 4	-6 5	2 3
23	0 170	949 9	-79 3	104 1	958 9	-3 8	-0.5	13 3	0 31	0 22	0 83	-20.8	11 3	12 3	0 5	-6 5	1 9
24	0 180	948 8	-86 8	106 2	958 7	-4.1	-0 5	13.5	0 31	0 16	0 85	-19.8	13 2	12 3	0 6	-6 5	1 5
25	0 190	947 7	-94 5	107 8	958 5	-4 2	-0 4	13 6	0 32	0 09	0 86	-18 8	15 1	12 3	0 7	-6 5	1 1
26	0 200	946 7	-102 3	108 8	958 4	-4 4	-0 2	13 7	0 32	0 03	0 87	-17 8	17 1	12 4	0 7	-6 5	0 7
27	0 210	945 6	-110 2	109 2	958 2	-4 6	0 0	13 8	0 33	-0 04	0 88	-16 6	19 0	12 6	0 8	-6 5	0.3
28	0 220	944 5	-118 0	109 0	958 0	-4 8	0 2	14 0	0 34	-0 10	0 88	-15 4	20 9	12 7	0 7	-6 6	-0 1
29	0 230	943 4	-125 8	108 3	957 9	-4 9	0 4	14 1	0 35	-0 17	0 88	-14 3	22 4	12 7	0 5	-6 8	-0 4
30	0 240	942 3	-133 6	106 9	957 7	-5 0	0 6	14 2	0 35	-0 24	0 88	-13 0	24 1	12 9	0 3	-6 9	-0 7
31	0 250	941 2	-141 3	104 9	957 5	-5 2	0 8	14 4	0 35	-0 31	0 87	-11 6	25 6	13 5	0 2	-6 9	-0 9
32	0 260	940 1	-148 9	102 4	957 3	-5 3	1 1	14 5	0 35	-0 38	0 86	-10 2	26 9	14 0	0 1	-6 9	-1 1
33	0 270	939 1	-156 4	99 2	957 2	-5 4	1 4	14 6	0 35	-0 45	0 85	-8 6	28 1	14 9	0 1	-6 7	-1 3
34	0 280	938 0	-163 7	95 4	957 0	-5 5	1 7	14 8	0 36	-0 51	0 84	-7 1	29 2	15 6	0 0	-6 6	-1 4
35	0 290	937 0	-171 0	91 0	956 8	-5 5	2 0	14 9	0 36	-0 58	0 82	-5 5	30 2	16 5	-0 1	-6 5	-1 5
36	0 300	936 0	-178 1	86 1	956 6	-5 6	2 3	15 1	0 35	-0 64	0 81	-4 1	31 3	17 2	-0 1	-6.4	-1 6
37	0 310	934 9	-185 0	80 5	956 5	-5 6	2 6	15 3	0 35	-0 71	0 79	-2 5	32 3	18 3	-0 3	-6 2	-1 7
38	0 320	933 9	-191 8	74 5	956 3	-5 6	2 9	15 5	0 35	-0 77	0 77	-0 9	33 1	19 5	-0 5	-5 9	-1 7
39	0 330	932 8	-198 4	67 9	956 1	-5 6	3 2	15 7	0 34	-0 83	0 76	0 8	33 9	20 8	-0 7	-5 5	-1 7

Table 4. Continued

d. Wing Pressure Data

ID	CONFIGURATION	MACH	ALPHA (DEG)	BETA (DEG)	CN1	CLM1	(0.949 LT M LT 0.960)
2	SINGLE STORE	0.95	1.89	0.00	0.136	-0.015	

RE*10-6/FT	P (PSFA)	Q (PSF)	T (DEG R)
2.44	670.9	423.5	468.2

WING LOWER (PYLON SIDE) SURFACE PRESSURE COEFFICIENTS

BL 8.3		BL 7.7		BL 7.1		BL 6.5		BL 5.9		BL 5.3		BL 4.7		BL 1.5		BL -1.5	
XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP
.1194	0.0126	.1096	-0.3521	.1013	0.3446	.0941	0.7398	.0879	0.2214	.0825	0.1790	.0777	0.1495	.2259	-0.0065	.2259	0.0102
.2388	0.1307	.2192	-0.1569	.2025	-0.3942	.5647	-0.6265	.1758	0.1414	.1650	0.0787	.1553	0.0667	.3000	-0.0554	.3000	-0.0591
.3582	0.2753	.3288	-0.1429	.3038	-0.1096	.6588	-0.4384	.2637	-0.7121	.2474	-0.1222	.2330	-0.0425	.3741	-0.1332	.3741	-0.1333
.4776	0.5601	.4384	-0.4725	.4051	-0.2078	.7529	-0.1640	.3517	-0.6550	.3299	-0.5749	.3107	-0.2164	.4482	-0.2246	.4482	-0.2179
.5970	0.5872	.5480	0.6774	.5063	-0.5816	.8471	0.0547	.4396	-0.4617	.4124	-0.6739	.2884	-0.5292	.5222	-0.2805	.5222	-0.2842
.7164	0.1108	.6575	0.2631	.6076	-0.4964			.5275	-0.5006	.4949	-0.3926	.4660	-0.7154	.5963	-0.3479	.5963	-0.3508
		.7671	-0.0700	.7089	-0.1908			.6154	-0.6181	.5773	-0.5037	.5437	-0.3716	.6704	-0.4430	.6704	-0.4469
				.8101	-0.0208			.7033	0.2771	.6598	-0.6877	.6214	-0.4370				
								.7912	-0.0772	.7423	-0.1231	.6990	-0.6213				
										.8247	0.0424	.7767	-0.0340				
												.8544	0.1172				

PYLON SURFACE PRESSURE COEFFICIENTS
OUTBOARD

LOWER ROW		UPPER ROW	
XL/LP	CP	XL/LP	CP
.1853	0.1353	.1853	0.5175
.3631	-0.6603	.3631	0.7114
.5409	-0.0415	.5409	-0.0467
.7187	-0.0170	.7187	-0.0858

PYLON SURFACE PRESSURE COEFFICENTS
INBOARD

LOWER ROW		UPPER ROW	
XL/LP	CP	XL/LP	CP
.1853	-0.4080	.1853	-0.3024
.3631	-0.6121	.3631	-0.6848
.5409	-0.5094	.5409	-0.6051
.7187	-0.3809	.7187	-0.4416

WING UPPER SURFACE PRESSURE COEFFICIENTS

BL 8.3		BL 7.7		BL 7.1		BL 6.5		BL 5.9		BL 5.3		BL 4.7	
XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP	XL/C	CP
.1194	0.4228	.1096	-0.4328	.1013	-0.4306	.0941	-0.3849	.0879	-0.3111	.0825	-0.2487	.0777	-0.2030
.2388	-0.4702	.2192	-0.4464	.2025	-0.4358	.1882	-0.4158	.1758	-0.3701	.1650	-0.3171	.1553	-0.2612
.3582	0.5393	.3288	-0.5034	.3038	-0.4747	.2824	0.4633	.2637	-0.4322	.2474	-0.3851	.2330	-0.3307
.4776	-0.6740	.4384	-0.6158	.4051	-0.5539	.3765	0.5068	.3517	-0.4843	.3299	-0.4487	.3107	-0.3964
.5970	-0.6997	.5480	-0.6312	.5063	-0.6583	.4706	-0.6152	.4396	-0.5725	.4124	-0.5296	.3884	-0.4770
.7164	-0.3550	.6575	0.6450	.6076	-0.6672	.5647	-0.6527	.5275	-0.6240	.4949	-0.5975	.4660	-0.5732
		.7671	0.2197	.7089	0.5705	.6588	-0.6093	.6154	-0.6157	.5773	-0.6044	.5437	-0.5910
				.8101	0.1019	.7529	0.4352	.7033	-0.5652	.6598	-0.5796	.6214	-0.5737
						.8471	0.0610	.7912	-0.2314	.7423	-0.5329	.6990	-0.5558
										.8247	-0.0078	.7767	-0.3979
												.8544	0.1353

Table 4. Continued

e. Store Body Pressure Expanded Data Set

ID 1 — STORE SURFACE PRESSURE COEFFICIENTS (CP) — (0.947 LE MACH LE 0 951)

CONFIGURATION	MACH	ALPSRB (DEG)	BETSRB (DEG)
SINGLE STORE	0.95	0.	0.

RE•10-6/FT	P (PSFA)	Q (PSF)	T (DEG R)
2.425	671.	422.	469.

XL/L	PHIR (DEG)								
	5	15	25	35	45	55	65	75	85
0 0317	0 6607	0 6405	0.6269	0.6049	0.5873	0.5638	0.5545	0.5378	0.5263
0.0673	0 4602	0 4431	0 4237	0 4043	0.3811	0.3629	0.3459	0 3296	0.3180
0 1010	0 3085	0.2829	0 2631	0 2441	0.2171	0.2001	0 1783	0.1623	0 1515
0 1347	0.1816	0 1604	0.1371	0.1130	0.0864	0 0666	0 0459	0.0314	0.0121
0.1683	0 0940	0 0735	0 0485	0 0231	-0 0067	-0.0274	-0.0565	-0.0726	-0.0971
0.2020	0 0640	0.0475	0 0138	-0 0186	-0.0538	-0.0844	-0.1222	-0.1430	-0 1725
0 2357	0 1261	0.0965	0.0427	-0.0075	-0.0601	-0.1082	-0.1600	-0.1875	-0.2231
0 2693	0.2815	0.1646	0.0792	0.0009	-0.0827	-0 1348	-0.1787	-0.2209	-0.2329
0.3030	0.0066	-0.0470	-0 0496	-0 0916	-0.1372	-0 1530	-0.1571	-0.1888	-0.1789
0 3366	-0.3566	-0.3499	-0.3240	-0.3122	-0.2983	-0.2723	-0.2246	-0.2295	-0 2139
0.3703	-0.5279	-0 5819	-0.5143	-0.4666	-0.4228	-0.3842	-0.3111	-0.2932	-0 2354
0.4040	-0.6921	-0.6923	-0.6764	-0 6237	-0.5373	-0.4611	-0.3734	-0.3367	-0.2701
0.4376	-0.6712	-0.6419	-0 6252	-0.5957	-0.5520	-0 4941	-0.4042	-0.3633	-0 3071
0 4713	-0.6320	-0.5997	-0.5510	-0.5222	-0.4959	-0.4414	-0.3957	-0.3585	-0 3238
0.5050	-0.5775	-0.5156	-0.4834	-0.4500	-0.4159	-0.3772	-0.3544	-0.3324	-0.3191
0.5386	-0.5083	-0 4312	-0.4069	-0.3906	-0.3650	-0.3434	-0.3235	-0.3071	-0.2989
0.5723	-0.4718	-0.3999	-0 3650	-0.3529	-0.3341	-0 3142	-0.3118	-0.2962	-0.2902
0 6060	-0.4364	-0.3627	-0 3341	-0.3116	-0.2848	-0.2520	-0.2411	-0.2384	-0.2506
0.6396	-0 634	-0 2671	-0 2306	-0.1999	-0.1477	-0.1513	-0.1378	-0.1489	-0.1611
0.6733	-0.3235	-0 1507	-0.0449	0.0197	0.0456	0.0459	0.0263	-0.0004	-0.0051
0 7070	-0.3910	-0.1431	-0.0545	0.0111	999.0000	0.0953	0.0567	0.0524	0 0378
0.7406	-0 4636	-0.2492	-0.1765	-0.1433	999.0000	-0 0491	-0.0376	-0.0230	-0.0092
0.7743	-0.5622	-0 3284	-0 2658	-0.2698	999.0000	-0.1582	-0.1307	-0.0984	-0.0829
0 8079	-0.6517	-0 4216	-0.3498	-0.3575	999.0000	-0.2592	-0.2216	-0.1944	-0.1756
0 8416	-0.7936	-0 5732	-0.5223	-0.5118	999.0000	-0.4192	-0.3968	-0.3699	-0.3502
0.8753	-0.9585	-0.7554	-0 6827	-0.6835	999.0000	-0.5941	-0.5686	-0.5727	-0 5706
0 9089	-0.8789	-0.8866	-0.8466	-0.7599	999.0000	-0.6764	-0.7377	-0.7324	-0 7212
0 9426	-0.8175	-0 7935	-0.8189	-0.8286	999.0000	-0.8387	-0 8349	-0 8320	-0 8168

Table 4. Continued

e. Continued

ID 1 STORE SURFACE PRESSURE COEFFICIENTS (CP) (0.947 LE MACH LE 0.951)

CONFIGURATION: SINGLE STORE | MACH: 0 95 | ALPSRB (DEG): 0 | BETSRB (DEG): 0.

RE*10-6/FT: 2.425 | P (PSFA): 671 | Q (PSF): 422. | T (DEG R): 469.

XL/L	PHIR (DEG)								
	95	105	115	125	135	145	155	165	175
0.0337	0.5177	0.5049	0.5036	0.4986	0.4977	0.4923	0.4938	0.4954	0.5071
0 0673	0.3077	0 2932	0.2890	0.2878	0.2803	0.2799	0.2759	0.2781	0.2900
0 1010	0.1386	0 1201	0.1162	0.1156	0.1078	0 1062	0.0976	0.0982	0.1101
0 1347	-0 0033	-0.0159	-0.0275	-0.0298	-0.0400	-0.0436	-0.0500	-0.0492	-0.0453
0.1683	-0 1156	-0 1305	-0.1433	-0.1490	-0.1613	-0.1622	-0.1744	-0.1762	-0 1729
0.2020	-0.1998	-0.2206	-0 2375	-0.2494	-0 2655	-0.2709	-0.2817	-0 2888	-0.2884
0 2357	-0 2606	-0.2862	-0.3109	-0.3276	-0.3382	-0.3546	-0.3678	-0.3744	-0.3765
0.2693	-0.2678	-0 2811	-0.3053	-0 3083	-0.3176	-0 3174	-0.3177	-0.3197	-0.3219
0 3030	-0 2846	-0 2159	-0.2375	-0.2485	-0 2636	-0.2777	-0 2861	-0.2918	-0.2974
0.3366	-0.1794	-0 1694	-0.1615	-0.1523	-0.1630	-0.1464	-0.2252	-0.2479	-0.2728
0.3703	0 1968	-0 1746	-0.1323	-0.0926	-0.0677	-0.0398	-0.0344	0.0242	-0.0111
0.4040	-0.2288	-0 1943	-0.1528	-0.1227	-0.1064	-0.0863	-0.0643	-0.0575	-0.0428
0.4376	-0.2771	-0.2365	-0.2035	-0.1746	-0.1644	-0.1426	-0.1351	-0.1293	-0.1296
0.4713	-0.3034	-0 2674	-0.2459	-0.2181	-0.2119	-0.1851	-0.1832	-0.1778	-0.1806
0.5050	-0.3095	-0.2847	-0.2707	-0.2542	-0.2482	-0.2305	-0.2288	-0.2231	-0.2290
0.5386	-0.2921	-0.2761	-0.2717	-0.2610	-0.2612	-0.2487	-0.2498	-0.2510	-0.2556
0.5723	-0.2854	-0.2731	-0.2713	-0.2629	-0.2677	-0.2625	-0.2673	-0.2691	-0.2802
0.6060	-0.2745	-0.2716	-0.2710	-0 2705	-0.2721	-0.2744	-0.2779	-0.2817	-0.2939
0.6396	-0.2046	-0.2076	-0.2380	-0 2564	-0.2531	-0.2643	-0 2654	-0.2762	-0 3006
0.6733	-0.0124	-0 [illegible]	-0.0117	0 0094	-0.0218	-0.0413	-0 0920	-0 1609	-0 1991
0.7070	0.0364	0 050[illegible]	0 0750	0.1254	999.0000	-0 [illegible]69	-0.0844	-0.0795	-0.1078
0 7406	-0 0065	0.0014	0 0012	0 0[illegible]3	999 0000	-0 1959	-0.1804	-0.1514	-0.1374
0 7743	-0 0808	-0.0734	-0.0940	-0.1014	999.0000	-0.2935	-0 2595	-0 2207	-0.2016
0 8079	-0 1730	-0.1803	-0.1962	-0.2177	999.0000	-0.3548	-0.3230	-0.2964	-0.2724
0.8416	-0 3497	-0 3632	-0.3882	-0.4058	999.0000	-0.4652	-0.4524	-0.4283	-0.4141
0 8753	-0 5828	-0.5961	-0 5990	-0 6144	999.0000	-0.5914	-0.5727	-0.5793	-0 5915
0.9089	-0 7229	-0.7281	0 7402	-0.6686	999.0000	-0 6443	-0.7232	-0.7306	-0 7448
0.9426	-0 8104	-0 8070	-0.7988	-0.7852	999.0000	-0.8350	-0.8414	-0.8447	-0 8391

Table 4. Continued

e. Continued

ID 1 — STORE SURFACE PRESSURE COEFFICIENTS (CP) — (0.947 LE MACH I.E 0 951)

CONFIGURATION	MACH	ALPSRB (DEG)	BETSRB (DEG)
SINGLE STORE	0.95	0.	0.

RE*10-6/FT	P (PSFA)	Q (PSF)	T (DEG R)
2 425	671.	422.	469.

XL/L	PHIR (DEG)								
	185	195	205	215	225	235	245	255	265
0.0337	0.5181	0.5232	0.5409	0.5496	0.5717	0.5887	0.6121	0.6266	0.6499
0.0673	0.3006	0 3017	0 3161	0.3294	0.3450	0.3639	0.3872	0.4037	0.4271
0.1010	0.1179	0.1163	0.1297	0.1437	0.1595	0.1768	0.1956	0.2113	0 2428
0.1347	-0.0369	-0 0379	-0.0299	-0.0177	-0.0033	0 0084	0.0294	0.0479	0.0754
0.1683	-0.1687	-0 1725	-0.1650	-0 1548	-0.1426	-0.1283	-0.1143	-0.0957	-0 0672
0.2020	-0.2865	-0 2920	-0.2822	-0.2746	-0.2648	-0.2514	-0.2382	-0.2199	-0 1899
0 2357	-0.3800	-0.3857	-0.3827	-0.3772	-0.3605	-0.3581	-0.3463	-0.3212	-0 2897
0 2693	-0 3219	-0 3237	-0 3127	-0.3354	-0.3293	-0 3388	-0.3481	-0.3393	-0.3225
0.3030	-0 3022	-0.3059	-0.2982	-0.3040	-0.2915	-0.2931	-0.2868	-0.2659	-0 2462
0.3366	-0.3016	-0 3094	-0.3292	-0.2641	-0.2633	-0.2546	-0.2359	-0.2377	-0 2666
0.3703	-0.0040	-0.0516	-0 1116	-0.1356	-0.1608	-0.2150	-0.2177	-0.2695	-0.2829
0 4040	-0.0510	-0 0782	-0.0948	-0.1264	-0.1387	-0.2009	-0.2183	-0.2920	-0.3170
0 4376	-0.1336	-0 1458	-0.1581	-0.1826	-0.1892	-0.2315	-0.2606	-0.3063	-0.3520
0 4713	-0 1856	-0.2015	-0.2129	-0.2363	-0.2445	-0.2736	-0.2996	-0.3471	-0.3917
0 5050	-0.2379	-0.2513	-0 2682	-0.2890	-0.2994	-0 3307	-0.3530	-0.3918	-0.4333
0 5386	-0.2699	-0 2870	-0.3014	-0 3224	-0.3340	-0.3638	-0.3875	-0.4251	-0.4494
0.5723	-0.2965	-0.3143	-0.3300	-0.3493	-0.3647	-0.3883	-0.4157	-0.4490	-0.4723
0.6060	-0.3129	-0 3329	-0 3516	-0 3730	-0.3872	-0.4110	-0.4372	-0.4697	-0 4903
0.6396	-0.3280	-0.3444	-0.3640	-0.3968	-0.4027	-0.4414	-0.4570	-0.4874	-0 5098
0.6733	-0.2562	-0.2907	-0.2975	-0.3062	-0.3339	-0.3564	-0.4306	-0.4844	-0.5070
0 7070	-0.1189	-0 1092	-0.1006	-0.0507	999 0000	-0.3287	-0.3593	-0.3948	-0 4271
0.7406	-0.1327	-0 1303	-0.1213	-0.1219	999.0000	-0.4480	-0.4501	-0.4093	-0.3880
0.7743	-0.1947	-0 1941	-0.2024	-0.2133	999.0000	-0.5145	-0.4957	-0 4659	-0 4338
0 8079	-0.2651	-0.2723	-0.2825	-0.3027	999.0000	-0.5537	-0.5347	-0.5175	-0 4917
0.8416	-0 4036	-0 4213	-0 4482	-0.4661	999.0000	-0.6377	-0.6219	-0.5989	-0 5729
0 8753	-0.6175	-0.6551	-0.6737	-0.6862	999.0000	-0.7601	-0.7467	-0.7522	-0.7497
0.9089	-0.7648	-0.7872	-0.8057	-0.6169	999.0000	-0.7755	-0.8513	-0.8590	-0.8790
0.9426	-0 8233	-0.8064	-0.7867	-0.7756	999.0000	-0.9197	-0.9294	-0 9036	-0 8716

Table 4. Continued

e. Concluded

ID 1 STORE SURFACE PRESSURE COEFFICIENTS (CP) (0.947 LE MACH LE 0.951)

CONFIGURATION: SINGLE STORE | MACH: 0.95 | ALPSRB (DEG): 0. | BETSRB (DEG): 0.

RE*10-6/FT: 2.425 | P (PSFA): 671. | Q (PSF): 422. | T (DEG R): 469.

XL/L	PHIR (DEG)								
	275	285	295	305	315	325	335	345	355
0.0337	0.6637	0.6793	0.6987	0.6995	0.7047	0.7128	0.7161	0.7000	0.6851
0 0673	0 4500	0 4666	0.4856	0.4981	0.5023	0 5161	0.5181	0.5036	0.4898
0.1010	0.2631	0.2841	0.3072	0.3280	0.3374	0.3543	0.3567	0.3429	0.3327
0.1347	0.0995	0.1272	0.1509	0.1716	0.1924	0.2103	0.2238	0.2155	0.2060
0.1683	-0.0422	-0.0145	0.0138	0.0489	0.0740	0.1009	0.1185	0.1132	0.1125
0.2020	-0.1579	-0.1275	-0.0922	-0.0494	-0.0047	0.0232	0.0588	0.0600	0.0744
0.2357	-0.2457	-0.2058	-0.1638	-0 1023	-0.0224	0.0110	0.0751	0.0937	0.1293
0 2693	-0.2873	-0.2392	-0.1866	-0.1176	-0.0401	0.0583	0.1456	0.2145	0.2936
0.3030	-0.3155	-0.1969	-0.1505	-0.1059	-0.0474	0.0529	0 1045	0.2309	0.2107
0.3366	-0.2453	-0.2275	-0 2180	-0.2172	-0.2232	-0.1575	-0.1805	-0.1258	-0.2267
0.3703	-0.3155	-0.3170	-0.3353	-0.3527	-0.3861	-0.3770	-0.4275	-0.4330	-0.5667
0 4040	-0.3760	-0.4048	-0.4401	-0.4851	-0.5489	-0.5357	-0.6005	-0.6188	-0.7390
0.4376	-0.4199	-0.4641	-0.5250	-0.5833	-0.6312	-0.6375	-0.6717	-0.6851	-0.6908
0.4713	-0.4513	-0.4931	-0.5510	-0.5955	-0.6260	-0.6382	-0.6556	-0.6553	-0.6603
0.5050	-0 4771	-0.5027	-0 5512	-0.5926	-0.6123	-0.6222	-0 6489	-0.6451	-0 6339
0.5386	-0.4881	-0.5128	-0.5542	-0.5936	-0.6104	-0.6174	-0.6248	-0.6141	-0.5684
0.5723	-0 5076	-0.5276	-0.5673	-0.5978	-0.6050	-0 6039	-0.6062	-0.5989	-0 5457
0.6060	-0 5255	-0.5420	-0.5747	-0.6010	-0.5997	-0.5969	-0.6105	0.5451	-0 5155
0.6396	-0.5431	-0.5571	-0.5820	-0.6086	-0.5903	-0.5947	-0.5887	-0.5461	-0.5237
0.6733	-0.5453	-0.5614	-0.5694	-0.5410	-0.4843	-0.4917	-0.4883	-0.5096	-0 4934
0 7070	-0.4497	-0.4133	-0.4123	-0.3359	999.0000	-0.2614	-0 3403	-0.4395	-0 5541
0 7406	-0.3812	-0.3692	-0.4109	-0.4270	999 0000	-0.2884	-0.3378	-0.3980	-0.5854
0 7743	-0 4402	-0 4429	-0.4677	-0.4963	999.0000	-0.3683	-0 4127	-0.4858	-0 6312
0.8079	-0 4992	-0 5037	-0.5210	-0.5423	999.0000	-0.4572	-0 4951	-0.5662	-0.6773
0 8416	-0 5839	-0.5895	-0.6149	-0.6370	999.0000	-0 5989	-0.6373	-0.6860	-0.7750
0 8753	-0 7719	-0 7841	-0.8039	-0.8181	999.0000	-0 8284	-0.8398	-0.8481	-0 9242
0.9089	-0.9029	-0 8958	-0.9011	-0.8393	999.0000	-0.8462	-0.8266	-0.8384	-0.9218
0.9426	-0 8465	-0 7984	-0.7879	-0.7850	999.0000	-0.7650	-0 8150	-0.8417	-0.8421

Table 4. Continued

f. Store Fin Pressure Expanded Data Set

FIN PRESSURE COEFFICIENTS (CP) (0 947 LE MACH LE 0.951)

ID	CONFIGURATION	MACH	ALPSRB (DEG)	BETSRB (DEG)
1	SINGLE STORE	0.95	0.	0

RE•10-6/FT	P (PSFA)	Q (PSF)	T (DEG R)
2.441	672.	424.	468.

PHIF	SURF												
		XL/C ROW 1											
		0.0623	0.12 5	0.1868	0.2491	0 3113	0 3736	0.4359	0 4981	0.5604	0.6227	0 6849	0.7472	0.8095	0.8717
45.0	LEFT	-0.1176	-0.1793	-0.2247	-0.2907	-0.3014	-0.3406	-0.4123	-0.4832	-0.5360	-0.6208	-0.6976	-0.7477	-0.7960	-0 8297
45.0	RIGHT	-0.0061	-0.0602	-0.1217	-0.1688	-0.1813	-0 2280	-0.3141	-0.3861	-0.4466	-0.5360	-0.6193	-0.6794	-0.7307	-0.7869
		XL/C ROW 2											
		0.0647	0 1294	0.1942	0.2589	0.3236	0.3883	0.4531	0.5178	0.5825	0.6472	0 7120	0.7767	0.8414	0.9061
45.0	LEFT	-0.1760	-0.2361	-0.2721	-0 3080	-0.3506	-0 4053	-0.4801	-0 5220	-0.5643	-0.6390	-0.7050	-0 7612	-0.8093	-0.8215
45.0	RIGHT	-0.0597	-0 1230	-0.1589	-0.1933	-0.2371	-0.2981	-0.3819	-0.4262	-0.4799	-0.5572	-0.6369	-0.6945	-0.7440	-0.7819
		XL/C ROW 3											
		0.0673	0.1347	0.2020	0.2694	0.3367	0 4040	0 4714	0.5387	0.6061	0.6734	0.7407	0 8081	0.8754	
45.0	LEFT	-0 2228	-0.2629	-0.3010	-0.3454	-0 3914	-0.4598	-0.4943	-0.5289	-0 5885	-0.6576	-0.7244	-0.7783	-0.8184	
45.0	RIGHT	-0 1005	-0 1444	-0.1831	-0 2295	-0.2795	-0.3592	-0 4023	-0.4443	-0.5116	-0.5828	-0.6615	-0.7176	-0.7633	
		XL/C ROW 4											
		0.0702	0.1404	0.2107	0.2809	0.3511	0 4213	0.4916	0.5618	0.6320	0.7022	0.7725	0.8427		
45.0	LEFT	-0.2363	-0.2858	-0.3350	-0.3798	-0.4641	-0 4899	-0.5245	-0.5666	-0.6268	-0.6853	-0 7445	-0.7876		
45.0	RIGHT	-0.1100	-0.1633	-0.2125	-0.2577	-0.3528	-0.3909	-0.4224	-0.4697	-0 5349	-0.6093	-0.6742	-0.7219		
		XL/C ROW 5											
		0 0733	0 1466	0.2199	0.2933	0.3666	0 4399	0.5132	0.5865	0 6598	0.7331	0.8065	0.8798		
45 0	LEFT	-0.2970	-0.3287	-0.3851	-0.4510	-0.4902	-0 4968	-0.5273	-0.5815	-0.6332	-0.6971	-0.7509	-0.7857		
45.0	RIGHT	-0.1696	-0 2126	-0.2595	-0 3348	-0.3922	0.4033	-0.4327	-0.4979	-0.5594	-0.6380	-0.6880	-0.7301		
		XL/C ROW 6											
		0 0767	0.1535	0.2302	0.3070	0.3837	0 4605	0 5372	0.6140	0.6907	0.7675	0 8442			
45.0	LEFT	-0.3047	-0.3526	-0.4423	-0.5082	-0 4927	-0 5083	-0.5477	-0 5996	-0 6544	-0 7055	-0 7500			
45.0	RIGHT	-0.1837	-0.2370	-0.3284	-0.4094	-0.4040	-0.4178	-0.4580	-0.5131	-0.5804	-0.6443	-0.6931			
		XL/C ROW 7											
		0.0805	0 1610	0.2415	0.3221	0 4026	0 4831	0.5636	0.6441	0 7246	0.8052				
45 0	LEFT	-0 3487	-0.3958	-0.5127	-0 4932	-0 4903	-0.5143	-0 5563	-0 6154	-0 6726	-0.7306				
45 0	RIGHT	-0.2363	-0.2853	-0.4158	-0.4109	-0 4105	-0 4346	-0 4813	-0.5410	-0.6143	-0.6765				
		XL/C ROW 8											
		0 0846	0 1692	0 2538	0 3384	0 4230	0.5076	0.5922	0 6768	0.7614	0.8460				
45 0	LEFT	-0 3535	-0.5284	-0.5064	-0 4856	-0.5087	-0 5489	-0 5909	-0 6324	-0.7039	-0 7524				
45.0	RIGHT	-0.2315	-0 4234	-0 4208	-0 3999	-0 4166	-0.4516	-0.5004	-0.5646	-0.6399	-0 6857				

Table 4. Continued

f. Continued

FIN PRESSURE COEFFICIENTS (CP) (0.947 LE MACH LE 0 951)

ID	CONFIGURATION	MACH	ALPSRB (DEG)	BETSRB (DEG)
1	SINGLE STORE	0 95	0.	0.

RE*10-6/FT	P (PSFA)	Q (PSF)	T (DEG R)
2.441	672.	424.	468.

XL/C ROW 1

PHIF	SURF												
		0 0623	0 1245	0 1868	0.2491	0 3113	0.3736	0.4359	0.4981	0 5604	0 6227	0.6849	0.7472	0 8095	0 8717
135 0	LEFT	0 0816	0 0127	-0.0503	-0.0950	-0.1279	-0.1823	-0.2670	-0 3596	-0.4535	-0 5586	-0 6364	-0.6835	-0 7103	-0 7421
135 0	RIGHT	-0 2097	-0 2433	-0.2650	-0.3130	-0 3155	-0 3357	-0,3926	-0.4411	-0.4680	-0 5343	-0.5991	-0.6459	-0.6951	-0 7545

XL/C ROW 2

PHIF	SURF														
		0 0647	0.1294	0.1942	0.2589	0.3236	0.3883	0.4531	0.5178	0.5825	0.6472	0 7120	0.7767	0 8414	0.9061
135 0	LEFT	0 0457	-0 0377	-0.0868	-0.1313	-0.1839	-0.2524	-0.3494	-0 4330	-0.5036	-0.5845	-0.6565	-0.6972	-0.7165	-0,7313
135 0	RIGHT	-0 2863	-0.3015	-0.3221	-0.3434	-0.3713	-0.4001	-0.4568	-0.4699	-0.4932	-0.5509	-0.6129	-0.6584	-0.7106	-0.7593

XL/C ROW 3

PHIF	SURF														
		0 0673	0 1347	0.2020	0.2694	0.3367	0 4040	0.4714	0.5387	0.6061	0.6734	0 7407	0.6081	0.8754	
135.0	LEFT	0.0058	-0.0588	-0.1132	-0.1694	-0.2295	-0 3180	-0.3969	-0.4646	-0.5387	-0 6033	-0.6697	-0.6994	-0.7201	
135 0	RIGHT	-0 3370	-0.3355	-0.3482	-0 3677	-0.4037	-0.4437	-0.4496	-0.4610	-0.5003	-0.5504	-0.6226	-0.6767	-0 7288	

XL/C ROW 4

PHIF	SURF														
		0 0702	0.1404	0 2107	0.2809	0.3511	0.4213	0.4916	0 5618	0.6320	0.7022	0.7725	0 8427		
135 0	LEFT	-0 0029	-0 0725	-0 1389	-0.1935	-0 2970	-0.3736	-0.4329	-0.4883	-0.5573	-0.6218	-0 6646	-0.6870		
135.0	RIGHT	-0 3463	-0.3542	-0.3724	-0.3947	-0 4459	-0.4521	-0.4559	-0 4733	-0.5147	-0.5768	-0.6343	-0 6859		

XL/C ROW 5

PHIF	SURF														
		0 0733	0.1466	0.2199	0.2933	0.3666	0 4399	0.5132	0 5865	0 6598	0.7321	0.8065	0.8798		
135 0	LEFT	-0.0338	-0.1073	-0.1749	-0.2610	-0.3598	-0 4030	-0.4417	-0.5107	-0.5672	-0.6278	-0.6534	-0.6687		
135.0	RIGHT	-0.4101	-0 4057	-0.4161	-0.4456	-0.4566	-0.4429	-0 4447	-0 4818	-0.5281	-0.5982	-0.6459	-0.6922		

XL/C ROW 6

PHIF	SURF														
		0 0767	0.1535	0.2302	0.3070	0.3837	0.4605	0.5372	0.6140	0 6907	0.7675	0.8442			
135 0	LEFT	-0.0533	-0.1378	-0.2385	-0 3652	-0.3983	-0.4246	-0.4725	-0.5247	-0.5857	-0.6279	-0.6472			
135 0	RIGHT	-0 4441	-0.4305	-0.4703	-0.4898	-0.4645	-0 4573	-0.4701	-0.4991	-0.5519	-0.6117	-0.6613			

XL/C ROW 7

PHIF	SURF														
		0 0805	0 1610	0.2415	0.3221	0.4026	0 4831	0.5636	0 6441	0 7246	0.8052				
135 0	LEFT	0 0931	-0 1817	-0.3437	-0.4025	-0.4147	-0.4428	-0.4912	-0 5419	-0.6024	-0 6366				
135 0	RIGHT	-0 4813	-0 4708	-0 5071	-0 4681	-0.4508	-0 4508	-0.4692	-0.5097	-0.5761	-0.6403				

XL/C ROW 8

PHIF	SURF														
		0 0846	0 1692	0 2538	0 3384	0 4230	0 5076	0.5922	0 6768	0 7614	0 8460				
135 0	LEFT	-0 0945	-0 3180	-0 4053	-0 4032	-0 4175	-0'4524	-0.4975	-0.5515	-0 6043	-0.6218				
135 0	RIGHT	-0 4808	-0 5486	-0 4798	-0 4516	-0 4442	-0 4570	-0.4895	-0 5378	-0.6106	-0 6672				

Table 4. Continued

f. Continued

FIN PRESSURE COEFFICIENTS (CP) (0.947 LE MACH LE 0.951)

ID 1 | CONFIGURATION SINGLE STORE | MACH 0.95 | ALPSRB (DEG) 0 | BETSRB (DEG) 0.

RE*10-6/FT 2.441 | P (PSFA) 672 | Q (PSF) 424. | T (DEG R) 468.

XL/C ROW 1

PHIF	SURF													
		0 0623	0.1245	0 1868	0.2491	0.3113	0 3736	0.4359	0.4981	0 5604	0.6227	0 6849	0.7472	0.8095	0 8717
225 0	LEFT	-0.0604	-0.1101	-0.1813	-0 1903	-0 2316	-0 2747	-0.3369	-0.4227	-0.5270	-0.6372	-0.7115	-0.7527	-0.7734	-0.7620
225 0	RIGHT	-0.4577	-0.4932	-0.5218	-0.5502	-0.5481	-0.5507	-0.5789	-0.6176	-0.6593	-0.7140	-0.7629	-0.7922	-0.8167	-0.6573

XL/C ROW 2

PHIF	SURF													
		0.0647	0 1294	0.1942	0.2589	0.3236	0.3883	0.4531	0.5178	0.5825	0.6472	0.7120	0.7767	0 8414	0 9061
225 0	LEFT	-0.0844	-0 1506	-0 1899	-0.2264	-0 2701	-0.3205	-0.4105	-0.5045	-0.5885	-0.6728	-0.7380	-0.7626	-0.7727	-0.7596
225.0	RIGHT	-0.5222	-0 5542	-0.5696	-0 5840	-0.5934	-0.6010	-0.6311	-0.6562	-0.6744	-0.7167	-0.7600	-0.7860	-0.8202	-0.8565

XL/C ROW 3

PHIF	SURF													
		0.0673	0.1347	0 2020	0.2694	0.3367	0 4040	0.4714	0.5387	0.6061	0.6734	0.7407	0.8081	0.8754	
225.0	LEFT	-0.1290	-0 1796	-0.2192	-0.2635	-0 3039	-0 3717	-0.4610	-0.5496	-0.6285	-0.6946	-0.7497	-0.7693	-0 7731	
225.0	RIGHT	-0.5834	-0.5940	-0.6087	-0 6121	-0.6190	-0 6339	-0.6434	-0.6502	-0.6793	-0.7171	-0.7647	-0.7980	-0.8337	

XL/C ROW 4

PHIF	SURF													
		0.0702	0.1404	0.2107	0.2809	0.3511	0.4213	0.4916	0.5618	0.6320	0.7022	0.7725	0.8427		
225.0	LEFT	-0 1375	-0.1948	-0.2428	-0.2792	-0.3522	-0 4375	-0.5187	-0.5866	-0.6529	-0.7102	-0.7435	-0.7534		
225.0	RIGHT	-0.5977	-0.6024	-0.6069	-0 6083	-0.6289	-0.6390	-0.6403	-0.6502	-0.6753	-0.7187	-0.7618	-0.7957		

XL/C ROW 5

PHIF	SURF													
		0.0733	0 1466	0.2199	0.2933	0.3666	0 4399	0.5132	0.5865	0.6599	0.7331	0.8065	0.8798		
225 0	LEFT	-0 1602	-0 2183	-0.2704	-0 3252	-0 4235	-0 4972	-0.5484	-0.6200	-0.6720	-0.7272	-0 7410	-0.7468		
225.0	RIGHT	-0.6647	-0 6544	-0.6571	-0 6526	-0.6604	-0 6426	-0.6304	-0.6540	-0.6842	-0.7414	-0.7737	-0.8023		

XL/C ROW 6

PHIF	SURF													
		0.0767	0 1535	0.2302	0.3070	0.3837	0.4605	0.5372	0 6140	0.6907	0.7675	0 8442		
225.0	LEFT	-0.1744	-0 2387	-0.3071	-0.4228	-0 4935	-0 5380	-0.5895	-0.6393	-0.6965	-0.7304	-0 7336		
225 0	RIGHT	-0.6995	-0.6747	-0.6824	-0.6932	0 6697	-0 6539	-0.6502	-0.6604	-0 6923	-0.7375	-0.7753		

XL/C ROW 7

PHIF	SURF													
		0 0805	0.1610	0 2415	0.3221	0.4026	0 4831	0.5636	0.6441	0.7246	0.8052			
225 0	LEFT	-0.1950	-0.2668	-0.3941	-0.4915	-0 5318	-0 5630	-0.6096	-0 6615	-0 7168	-0.7326			
225.0	RIGHT	-0.7440	-0.7177	-0.7226	-0.6846	-0.6550	-0 6368	-0 6414	-0.6689	-0.7256	-0.7755			

XL/C ROW 8

PHIF	SURF													
		0.0846	0 1692	0 2538	0 3384	0.4230	0 5076	0.5922	0.6768	0.7614	0.8460			
225 0	LEFT	-0 1964	-0.3662	-0.4989	-0.5279	-0.5442	-0 5751	-0.6208	-0.6718	-0.7161	-0.7118			
225 0	RIGHT	-0 7307	-0 7433	-0.6871	-0.6559	-0 6441	-0 6491	-0.6629	-0 6944	-0.7586	-0.8253			

Table 4. Concluded

f. Concluded

FIN PRESSURE COEFFICIENTS (CP) (0.947 LE MACH LE 0 951)

ID 1 | CONFIGURATION SINGLE STORE | MACH 0.95 | ALPSRB (DEG) 0 | BETSRB (DEG) 0.

RE*10-6/FT 2.441 | P (PSFA) 672. | Q (PSF) 424. | T (DEG R) 468.

XL/C ROW 1

PHIF	SURF	0 0623	0.1245	0.1868	0.2491	0 3113	0.3736	0.4359	0.4981	0.5604	0.6227	0.6849	0.7472	0.8095	0.8717
315 0	LEFT	-0 4312	-0.4468	-0.4544	-0.4910	-0.5073	-0 5237	-0.5556	-0.6014	-0.6838	-0.7731	-0 8240	-0.8484	-0.8574	-0.8273
315 0	RIGHT	-0 2617	-0.2810	-0.3038	-0.3318	-0 3749	-0.4175	-0.4762	-0.5460	-0.6451	-0.7590	-0.8394	-0.8711	-0.8371	-0.7263

XL/C ROW 2

PHIF	SURF	0.0647	0.1294	0.1942	0.2589	0.3236	0.3883	0.4531	0.5178	0.5825	0.6472	0.7120	0.7767	0.8414	0.9061
315 0	LEFT	-0.4742	-0.4974	-0.5016	-0.5155	-0.5369	-0.5533	-0.5988	-0.6706	-0.7300	-0.7840	-0.8264	-0.8446	-0 8352	-0.7772
315.0	RIGHT	-0.3367	-0.3746	-0.3871	-0.4052	-0.4375	0 4779	-0 5439	-0.6258	-0.7083	-0.7803	-0 8084	-0.7441	-0.6729	-0.6393

XL/C ROW 3

PHIF	SURF	0.0673	0.1347	0.2020	0.2694	0.3367	0 4040	0.4714	0.5387	0.6061	0.6734	0.7407	0.8081	0 8754
315 0	LEFT	-0.4962	-0 5106	-0 5223	-0 5348	-0.5527	-0.5783	-0.6268	-0.6860	-0.7359	-0.7719	-0 8135	-0.8334	-0.8032	
315.0	RIGHT	-0 3847	-0.4024	-0.4047	-0.4300	-0.4706	-0.5198	-0.5874	-0.6657	-0.7242	-0.7705	-0.8061	-0.7257	-0.6763	

XL/C ROW 4

PHIF	SURF	0.0702	0.1404	0 2107	0.2809	0.3511	0.4213	0.4916	0 5618	0.6320	0.7022	0.7725	0.8427
315.0	LEFT	-0.5102	-0.5136	-0.5314	-0.5431	-0.5719	-0.6173	-0.6697	-0.7036	-0.7408	-0.7794	-0.8176	-0.8365	
315.0	RIGHT	-0.3991	-0.4247	-0.4337	-0.4636	-0.5166	-0.5844	-0.6600	-0.7087	-0.7504	-0.8039	-0.8229	-0.7400	

XL/C ROW 5

PHIF	SURF	0 0733	0.1466	0.2199	0.2933	0.3666	0 4399	0.5132	0.5865	0 6598	0.7331	0.8065	0.8798
315.0	LEFT	-0.5282	-0.5387	-0.5581	-0 5720	-0.6213	-0.6604	-0.6763	-0.7109	-0.7408	-0.7939	-0.8253	-0.8112	
315.0	RIGHT	-0 4002	-0.4069	-0.4477	-0 4932	-0.5618	-0.6373	-0 6778	-0.7297	-0.7829	-0.8232	-0 7979	-0 7136	

XL/C ROW 6

PHIF	SURF	0 0767	0.1535	0.2302	0.3070	0.3837	0.4605	0.5372	0.6140	0.6907	0.7675	0.8442
315 0	LEFT	-0 5368	-0.5429	-0.5728	-0.6328	-0.6630	-0 6691	-0.6827	-0.7072	-0.7529	-0.7930	-0.8118	
315 0	RIGHT	-0 4462	-0 4481	-0.5010	-0 5812	-0.6391	-0 6634	-0 6878	-0.7486	-0.7716	-0.7215	-0 6757	

XL/C ROW 7

PHIF	SURF	0 0805	0.1610	0.2415	0.3221	0.4026	0.4831	0.5636	0.6441	0.7246	0.8052
315 0	LEFT	-0 5488	-0.5620	-0.6221	-0.6640	-0.6541	-0 6500	-0.6687	-0.7055	-0.7553	-0.7922	
315 0	RIGHT	-0 4361	-0.4877	-0.5702	-0.6445	-0.6530	-0.6467	-0.7019	-0.7547	-0.7651	-0.7243	

XL/C ROW 8

PHIF	SURF	0 0846	0.1692	0.2538	0 3384	0 4230	0 5076	0 5922	0 6768	0 7614	0.8460
315 0	LEFT	-0.5468	-0.6249	-0.6788	-0.6521	-0 6377	-0.6467	-0 6784	-0.7204	-0.7743	-0.8021	
315 0	RIGHT	-0 4609	-0.5696	-0 6676	-0.6592	-0.6443	-0.6614	-0.7257	-0 7569	0 7845	-0.7422	

Table 5. Nomenclature for Simulated Trajectory and Free-Stream Tabulated Data

PAGE HEADING (COMMON TO ALL SUMMARIES)

LINE 1

RUN	Sequential indexing number for referencing data. A constant throughout specified (or all) points of a survey.
SURVEY	Configuration indexing number used to correlate data with the test log. Survey may be used to identify all or portions of a grid set.
M	Wind tunnel free-stream Mach number
PT	Wind tunnel free-stream total pressure, psfa
TT	Wind tunnel free-stream total temperature, °F
Q	Wind tunnel free-stream dynamic pressure, psf
P	Wind tunnel free-stream static pressure, psfa
T	Wind tunnel free-stream static temperature, °R
V	Wind tunnel free-stream velocity, ft/sec
RE	Wind tunnel free-stream unit Reynolds number, millions per foot
TDP	Hygrometer dew point temperature, °F
SH	Wind tunnel specific humidity, lbm H_2O per lbm air
SCALE	Aircraft model scale factor
DATE	Calendar time at which data were recorded
TIME	Time at which data were recorded (hr/min/sec)
CON SET	Run/point number of constant set used in data reduction
ZERO SET	Run/point number of the air-off set of instrument readings used in data reduction
TEST	Alphanumeric notation for referencing a specific test program in a specific test unit

Table 5. Continued

LINE 2	
A/C	Aircraft designation
ALPHA,BETA	Aircraft model angle of attack and sideslip angle, respectively, deg
IP,IY	Pitch and yaw incidence angles of the store longitudinal axis at carriage with respect to the aircraft longitudinal (X_A) axis, positive nose up and nose to the right, respectively, deg
IR	Roll incidence of the store Z_B axis at carriage with respect to the aircraft plane of symmetry, positive for clockwise roll looking upstream, deg
CONFIG	Aircraft store-loading designation
WING	Location of store launch position
STORE	Store model designation
A	Store reference area, ft^2, full scale
L1,L2,L3	Store reference lengths for pitching-moment, yawing-moment, and rolling-moment coefficients, respectively, ft, full scale
XCG	Axial distance from the store nose to the center-of-gravity location, ft, full scale
YCG,ZCG	Lateral and vertical distances from the store reference (balance) axis to the center-of-gravity location, positive in the positive Y_B and Z_B directions, respectively, ft, full scale
PHIS	Roll angle of the store Number 1 fin with respect to the X_B-Z_B plane, positive clockwise looking upstream, deg
PHIRB	Roll angle of the rotated-body axis negative Z_{RB} direction with respect to the balance positive C_N direction, positive for clockwise rotation when looking upstream, deg

Table 5. Continued

COLUMNAR HEADINGS

SUMMARY 1

PN	Sequential indexing number for referencing data obtained during one run. Point Number (PN) advances each time a new set of data inputs is obtained.
XREF,YREF,ZREF	See reference-axis system definitions listed subsequently
DPSI,DTHA,DPHI	See pylon-axis system definitions listed subsequently
ALPHAS,BETAS	Store model angle of attack and sideslip angle, respectively, deg
CAT,CN,CY	Store aerodynamic axial-force, normal-force, and side-force coefficients, positive in the negative X_B, negative Z_B, and positive Y_B directions, respectively
CLL,CLM,CLN	Store aerodynamic rolling-moment, pitching-moment, and yawing-moment coefficients. The positive vectors are coincident with the positive X_B, Y_B, and Z_B axes, respectively.
Q	Wind tunnel free-stream dynamic pressure, psf
NDX	Sequential indexing number for referencing data obtained during a grid set. Advances for each position in the set.
RUN	Sequential indexing number for referencing data. A constant throughout specified (or all) points of a survey.
PHIREF	Angle between the Z_{REF} axis and the X_P-Z_P plane, positive for clockwise rotation when looking upstream, deg

SUMMARY 2

PN	Sequential indexing number for referencing data obtained during one run. Point Number (PN) advances each time a new set of data inputs is obtained.
X,Y*,Z	Distance of the store cg from the flight-axis system origin in the X_F, Y_F, and Z_F directions, respectively, ft, full scale

Table 5. Continued

PSI*	Angle between the projection of the store longitudinal (X_B) axis in the X_F-Y_F plane and the X_F axis, positive for store nose to the right, deg
THA	Angle between the store longitudinal (X_B) axis and its projection in the X_F-Y_F plane, positive when the store nose is raised .oward wing, deg
PHI*	Angle between the store lateral (Y_B) axis and the intersection of the Y_B-Z_B and X_F-Y_F plane, positive for clockwise rotation when looking upstream, deg
ALPSRB,BETSRB*	Store model angle of attack and sideslip angle in the rotated body-axis system, respectively, deg
CAT,CNRB,CYRB*	Store aerodynamic axial-force, normal-force, and side-force coefficients, positive in the negative X_B, negative Z_{RB}, and positive Y_{RB} directions, respectively
CLL*,CLMRB,CLNRB*	Store aerodynamic rolling-moment, pitching-moment, and yawing-moment coefficients. The positive vectors are coincident with the positive X_B, Y_{RB}, and Z_{RB} axes, respectively.
*	An asterisk following a parameter signifies right wing equivalent data when the measurement was made under the aircraft left wing. This is accomplished by changing the sense of the parameter.

Table 5. Continued

STORE BODY-AXIS SYSTEM DEFINITIONS

Coordinate Directions

X_B	Parallel to the store longitudinal axis, positive direction is upstream at store release
Y_B	Perpendicular to X_B and Z_B directions, positive to the right looking upstream when the store is at zero yaw and roll angles
Z_B	Perpendicular to the X_B direction and parallel to the aircraft plane of symmetry when the store and aircraft are at zero yaw and roll angles, positive downward (away from wing) when the store is at zero pitch and roll angles

Origin

The store body-axis system origin is coincident with the store cg at all times. The X_B, Y_B, and Z_B coordinate axes rotate with the store in pitch, yaw, and roll so that mass moments of inertia about the three axes are not time-varying quantities.

STORE ROTATED BODY-AXIS SYSTEM DEFINITIONS

Coordinate Directions

X_{RB}	Coincident with the X_B direction
Y_{RB}	Perpendicular to the X_B and Z_{RB} directions and rotated by the angle PHIRB from the Y_B direction
Z_{RB}	Perpendicular to the X_B direction and rotated by the angle PHIRB from the Z_B direction

Origin

The store rotated body-axis system origin is coincident with the store body-axis system origin.

Table 5. Continued

PYLON-AXIS SYSTEM DEFINITIONS

Coordinate Directions

X_P	Parallel to the store longitudinal axis at carriage and at constant angular orientation with respect to the current aircraft flight path direction, positive forward
Y_P	Perpendicular to the X_P direction and parallel to the X_A - Y_A plane, positive to the right
Z_P	Perpendicular to the X_P and Y_P directions, positive downward

Origin

The pylon-axis system origin is coincident with the store cg at carriage. It is fixed with respect to the aircraft and thus translates along the current aircraft flight path at the free-stream velocity. The coordinate axes rotate to maintain constant angular orientation with respect to the current aircraft flight path direction

Positions

XP	Distance of the store cg from the pylon-axis system origin in the X_P direction, ft, full scale
YP	Distance of the store cg from the pylon-axis system origin in the Y_P direction, ft, full scale
ZP	Distance of the store cg from the pylon-axis system origin in the Z_P direction, ft, full scale

Attitudes (Yaw, Pitch, Roll Sequence)

DPSI	Angle between the projection of the store longitudinal axis in the X_P-Y_P plane and the X_P-axis, positive for the store nose to the right, deg
DTHA	Angle between the store longitudinal axis and its projection in the X_P-Y_P plane, positive when the store nose is raised, deg
DPHI	Angle between the store lateral (Y_B) axis and the intersection of the Y_B-Z_B and X_P-Y_P planes, positive for clockwise rotation when looking upstream, deg

Table 5. Continued

FLIGHT-AXIS SYSTEM DEFINITIONS

Coordinate Directions

X_F	Parallel to the current aircraft flight path direction, positive forward
Y_F	Perpendicular to the X_F and Z_F directions, positive to the right
Z_F	Parallel to the aircraft plane of symmetry and perpendicular to the current aircraft flight path direction, positive downward

Origin

The flight-axis system origin is coincident with the store cg at carriage. The origin is fixed with respect to the aircraft and thus translates along the current aircraft flight path at the free-stream velocity. The coordinate axes rotate to maintain alignment of the X_F axis with the current aircraft flight path direction.

Positions

X	Distance of the store cg from the flight-axis system origin in the X_F direction, ft, full scale
Y	Distance of the store cg from the flight-axis system origin in the Y_F direction, ft, full scale
Z	Distance of the store cg from the flight-axis system origin in the Z_F direction, ft, full scale

Attitudes (Yaw, Pitch, Roll Sequence)

PSI	Angle between the projection of the store longitudinal axis in the X_F-Y_F plane and the X_F-axis, positive for the store nose to the right, deg
THA	Angle between the store longitudinal axis and its projection in the X_F-Y_F plane, positive when the store nose is raised, deg
PHI	Angle between the store lateral (Y_B) axis and the intersection of the Y_B-Z_B and X_F-Y_F planes, positive for clockwise rotation when looking upstream, deg

Table 5. Continued

REFERENCE-AXIS SYSTEM DEFINITIONS

Coordinate Directions

X_{REF}	Parallel to the X_P direction, positive forward
Y_{REF}	Perpendicular to the X_{REF} direction and rotated through an angle ϕ_{REF} with respect to the Y_P direction, positive to the right
Z_{REF}	Perpendicular to the X_{REF} and Y_{REF} directions, positive downward for zero rotation of the Y_{REF} axis

Origin

The reference-axis system origin may be arbitrarily chosen and is determined from the set of initial position coordinates input at the initialization of the grid set. It is fixed with respect to the aircraft for the duration of the grid set. Origin coordinates and ϕ_{REF} angle are zero for free stream.

Positions

XREF	Distance of the store cg from the reference-axis system origin in the X_{REF} direction, ft, full scale
YREF	Distance of the store cg from the reference-axis system origin in the Y_{REF} direction, ft, full scale
ZREF	Distance of the store cg from the reference-axis system origin in the Z_{REF} direction, ft, full scale

Table 5. Concluded

AIRCRAFT-AXIS SYSTEM DEFINITIONS

Coordinate Directions

X_A	Parallel to the aircraft longitudinal axis, positive forward
Y_A	Perpendicular to the aircraft plane of symmetry, positive to the right
Z_A	Perpendicular to the X_A and Y_A directions, positive downward

Origin

The aircraft-axis system origin is coincident with the store cg at carriage. It is fixed with respect to the aircraft and thus translates along the current aircraft flight path at the free-stream velocity. The coordinate axes rotate to maintain constant angular orientation with respect to the current aircraft flight path direction.

Positions

XA	Distance of the store cg from the aircraft-axis system origin in the X_A direction, ft, full scale
YA	Distance of the store cg from the aircraft-axis system origin in the Y_A direction, ft, full scale
ZA	Distance of the store cg from the aircraft-axis system origin in the Z_A direction, ft, full scale

Attitudes (Yaw, Pitch, Roll Sequence)

DPSIA	Angle between the projection of the store longitudinal axis in the X_A-Y_A plane and the X_A-axis, positive for the store nose to the right, deg
DTHAA	Angle between the store longitudinal axis and its projection in the X_A-Y_A plane, positive when the store nose is raised, deg
DPHIA	Angle between the store lateral (Y_B) axis and the intersection of the Y_B-Z_B and X_A-Y_A planes, positive for clockwise rotation when looking upstream, deg

Table 6. Nomenclature for Captive Trajectory Tabulated Data

PAGE HEADING (COMMON TO ALL SUMMARIES)

LINE 1

RUN	Sequential indexing number for referencing data. A constant throughout each trajectory.
TRAJ	Configuration indexing number used to correlate data with the test log
M	Wind tunnel free-stream Mach number
PT	Wind tunnel free-stream total pressure, psfa
TT	Wind tunnel free-stream total temperature, °F
Q	Wind tunnel free-stream dynamic pressure, psf
P	Wind tunnel free-stream static pressure, psfa
T	Wind tunnel free-stream static temperature, °R
RE	Wind tunnel free-stream unit Reynolds number, millions per foot
TDP	Hygrometer dew point temperature, °F
SH	Wind tunnel specific humidity, lbm H_2O per lbm air
SCALE	Aircraft model scale factor
H	Simulated pressure altitude, K ft
DT	Initial trajectory integration time increment, sec
DATE	Calendar time at which data were recorded
TIME	Time at which data were recorded (hr/min/sec)
CON SET	Run/point number of constant set used in data reduction
ZERO SET	Run/point number of the air off set of instrument readings used in data reduction
TEST	Alphanumeric notation for referencing a specific test program in a specific test unit

Table 6. Continued

LINE 2	
STORE	Store model designation
WT	Store full-scale weight, lb
A	Store reference area, ft^2, full scale
L1,L2,L3	Store reference lengths for pitching-moment, yawing-moment, and rolling-moment coefficients, respectively, ft, full scale
XCG	Axial distance from the store nose to the center-of-gravity location, ft, full scale
DXMCG,DXNCG	Axial distance from the store center of gravity to the pitching-moment and yawing-moment reference centers, respectively, positive in the positive X_B direction, ft, full scale
YCG,ZCG	Lateral and vertical distances from the store reference (balance) axis to the center-of-gravity location, positive in the positive Y_B and Z_B directions, respectively, ft, full scale
IXX,IYY,IZZ	Full-scale moments of inertia about the store X_B, Y_B, and Z_B axes, respectively, slug-ft^2
IXY,IXZ,IYZ	Full-scale products of inertia in the store X_B-Y_B, X_B-Z_B, and Y_B-Z_B planes, respectively, slug-ft^2
CLP,CMQ,CNR	Store roll-damping, pitch-damping, and yaw-damping derivatives, respectively, per radian
LINE 3	
A/C	Aircraft designation
ALPHA,BETA	Aircraft model angle of attack and sideslip angle, respectively, deg
NZ	Aircraft load factor, g's
DIVE	Simulated aircraft dive angle, positive for decreasing altitude, deg

Table 6. Continued

BANK	Simulated aircraft bank angle, positive for right wing down, deg
IP,IY	Pitch and yaw incidence angles of the store longitudinal (X_B) axis at carriage with respect to the aircraft longitudinal (X_A) axis, positive nose up and nose to the right, respectively, deg
IR	Roll incidence of the store Z_B axis at carriage with respect to the aircraft plane of symmetry, positive for clockwise roll looking upstream, deg
CONFIG	Aircraft store loading designation
WING	Location of store launch position
MOTN	Restricted motion control parameter 0 = Unrestricted motion 1 = Pivot motion,pitch only 2 = Pivot motion, pitch and yaw 3 = Pivot motion, pitch, yaw, and roll 4 = Rail motion, translate only 5 = Rail motion, translate and pitch 6 = Rail motion, translate and yaw 7 = Rail motion, translate, pitch, and yaw 8 = Pitch, translate in ejector plane only
NROLL	CTS rig roll control parameter 0 = Rolling capability 1 = No roll capability 2 = Zero- or 6-in. -offset roll mechanism but no roll capability 3 = No roll capability (and assume CLL = 0)
AUTO	Autopilot control flag 0 = Autopilot off ELSE = Autopilot on
POST	Launch/postlaunch control parameter 0 = Launch trajectory 1 = Postlaunch trajectory

Table 6. Continued

COEF	External coefficient input control parameter 0 = No external coefficient input 1 = Constant external coefficient inputs 2 = Constant external coefficient inputs and drogue chute axial-force simulation
THRUST	Thrust simulation control parameter 0 = No thrust 1 = Thrust initiation at time zero 2 = Time delay for thrust initiation 3 = Lanyard and time delay for thrust initiation
EJECT	Ejector simulation control parameter 0 = No ejectors 1 = Time function ejector forces and cutoff control 2 = Distance function ejector forces and cutoff control 3 = Time function ejector forces and distance function cutoff control
XFE	Axial distance from the store nose to the forward ejector piston, ft, full scale
DXAE	Distance between forward and aft ejector pistons, ft, full scale
OMGM	Ejector piston line of action with respect to store X_B-Z_B plane, positive for clockwise rotation when looking upstream, deg
ZE1,ZE2	Distance cutoffs for forward and aft ejectors, respectively, ft, full scale

COLUMNAR HEADINGS

SUMMARY 1

PN	Sequential indexing number for referencing data obtained during one run. Point Number (PN) advances each time a new set of data inputs is obtained.
T	Cumulative time for the trajectory, seconds of full- scale flight time following release of store
X,Y,Z	See flight-axis system definitions listed in Table 5

Table 6. Continued

PSI,THA,PHI	See flight-axis system definitions listed in Table 5
ALPHAS,BETAS	Store model angle of attack and sideslip angle, respectively, deg
CAT,CN,CY	Store aerodynamic axial-force, normal-force, and side-force coefficients, positive in the negative X_B, negative Z_B, and positive Y_B directions, respectively
CLL,CLM,CLN	Store aerodynamic rolling-moment, pitching- moment, and yawing-moment coefficients. The positive vectors are coincident with the positive X_B, Y_B, and Z_B axes, respectively.
QA	Simulated full-scale dynamic pressure, psf
FE1,FE2	Forward and aft ejector forces, respectively, lb
SUMMARY 2	
PN	Sequential indexing number for referencing data obtained during one run. Point Number (PN) advances each time a new set of data inputs is obtained.
T	Cumulative time for the trajectory, seconds of full-scale flight time following release of store
VX,VY,VZ	Velocities of the full-scale store relative to the origin of a space-fixed axis system in the X_B, Y_B, and Z_B directions, respectively, ft/sec
UR	Total velocity of the full-scale store with respect to an earth-fixed point, ft/sec
U,V,W	Velocities of the full-scale store relative to the origin of the inertial-axis system in the positive X_B, Y_B, and Z_B directions, respectively, ft/sec
P,Q,R	Angular velocities of the full-scale store about the X_B, Y_B, and Z_B axes. The positive vectors are coincident with the positive X_B, Y_B, and Z_B axes, respectively, rad/sec.
UDOT,VDOT, WDOT	Accelerations of the full-scale store relative to the origin of the inertial-axis system in the positive X_B, Y_B, and Z_B directions, respectively, ft/sec^2
PDOT,QDOT, RDOT	Angular accelerations of the full-scale store about the X_B, Y_B, and Z_B axes. The positive vectors are coincident with the positive X_B, Y_B, and Z_B axes, respectively, rad/sec^2.

Table 6. Concluded

INERTIAL-AXIS SYSTEM DEFINITIONS

Coordinate Directions

X_I	Parallel to the aircraft flight path direction at store release, positive forward as seen by the pilot
Y_I	Perpendicular to the X_I and Z_I directions, positive to the right as seen by the pilot
Z_I	Parallel to the aircraft plane of symmetry and perpendicular to the aircraft flight path direction at store release, positive downward as seen by the pilot

Origin

The inertial-axis system origin is coincident with the store cg at release and translates along the initial aircraft flight path direction at the free-stream velocity. The coordinate axes do not rotate with respect to the initial aircraft flight path direction.

Positions

XI	Distance of the store cg from the inertial-axis system origin in the X_I direction, ft, full scale
YI	Distance of the store cg from the inertial-axis system origin in the Y_I direction, ft, full scale
ZI	Distance of the store cg from the inertial-axis system origin in the Z_I direction, ft, full scale

Attitudes (Pitch, Yaw, Roll Sequence)

NUI	Angle between the projection of the store longitudinal (X_B) axis in the X_I-Z_I plane and the X_I-axis, positive when the store nose is raised as seen by the pilot, deg
ETAI	Angle between the store longitudinal (X_B) axis and its projection in the X_I-Z_I plane, positive for the store nose to the right as seen by the pilot, deg
OMEGAI	Angle between the store vertical (Z_B) axis and the intersection of the Y_B-Z_B and X_I-Z_I planes, positive for clockwise rotation when looking upstream, deg

Table 7. Estimated Uncertainties

a. Wing and Pressure-Instrumented Store (Grid)

M	U(CN1)	U(CLM1)	U(ALPHA)	U(BETA)	U(CLMRB)	U(CLNRB)	U(ALPSRB)	U(BETSRB)	U(CP)
0.95	0.0042	0.0053	0.15	0.20	0.42	6.32	0.50	0.50	0.0069
1.20	0.0037	0.0047	0.15	0.20	0.37	5.61	0.50	0.50	0.0061

b. Metric Store (Grid and Trajectory)

M	U(CN)	U(CLM)	U(CY)	U(CLN)	U(CA)	U(CLL)	U(ALPHAS)	U(BETAS)
0.95	0.057	0.10	0.035	0.058	0.053	0.058	0.5	0.5
1.20	0.050	0.91	0.031	0.052	0.047	0.052	0.5	0.5

c. Positions and Attitudes (Trajectory)

M	U(X)	U(Y)	U(Z)	U(PSI)	U(THETA)	U(PHI)
0.95	0.10	0.10	0.10	0.15	0.15	1
1.20	0.10	0.10	0.10	0.15	0.15	1